Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 V 9
1. Edition

En

VE 4/9 F 2400 R 138
0 460 494 131

supersedes -
company: VWW
engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,9 - 3,3	mm		
1.2 Supply pump pressure	1500	4,9 - 5,5	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	33,0 -34,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
1.4 Idle speed regulation	475	6,0 -10,0	cm³/1000 strokes		2,0
1.5 Start	100	min. 35,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2600	11,0 -17,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,3-2,1(1,0-2,4)	(2,4-3,8)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,0-7,6
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0	
	2600	(10,0-18,0)	
	2400	27,5-29,5 (26,3-30,7)	
	1500	(31,3-35,7)	
	600	21,5-24,5 (20,0-26,0)	
switch-off elect.	400	0	
Idle stop	475	(4,0-12,0)	
	650	max. 6,0	
	1200	max. 5,0	
End stop	400	min. 18,0	
	500	max. 23,5	

2.4 Solenoid — max. cut-in voltage / test voltage: xxx min 10,0 V xxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*FH	1,9-2,4
A	
B	

Observations
*operating stroke (KSB)

7.83

A1

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 W.2
1. Edition
En

VE 4/9 F 2400 R 138-1

0 460 494 140

supersedes –
company: VWW
engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,9 - 3,3	mm		
1.2 Supply pump pressure	1500	4,9 - 5,5	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	33,0 -34,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	–	–	cm³/1000 strokes		
1.4 Idle speed regulation	450	6,0 -10,0	cm³/1000 strokes		2,0
1.5 Start	100	min. 35,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2600	11,0 -17,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,3-2,1(1,0-2,4)	(2,4-3,8)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,0-7,6
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0		
	2600		(10,0-18,0)	
	2400	27,5-29,5	(26,3-30,7)	
	1500		(31,3-35,7)	
	600	21,5-24,5	(20,0-26,0)	
switch-off mech.	2400	0		
switch-off elektr.	400	0		
Idle stop	450		(4,0-12,0)	
	650	max. 5,0		
	1200	max. 7,0		
End stop	400	min. 18,0		
	500	max. 23,5		

2.4 Solenoid: max. cut-in voltage xxx min. 10 V
xxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*FH	1,8-2,4
A	
B	

Observations
*operating stroke (KSB)

7.83

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 V 8
1. Edition

En

VE 4/9 F 2400 R 138-2
0 460 494 147

supersedes -
company: VWW
engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Testoil-ISO 4113

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,9 - 3,3	mm		
1.2 Supply pump pressure	1500	4,9 - 5,5	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	33,0 -34,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
1.4 Idle speed regulation	425	6,0 -10,0	cm³/1000 strokes		2,0
1.5 Start	≥ 100	min. 35,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2600	11,0 -17,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,3-2,1(1,0-2,4)	(2,4-3,8)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,0-7,6
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0	
	2600	(10,0-18,0)	
	2400	27,5-29,5(26,3-30,7)	
	1500	(31,3-35,7)	
	600	21,5-24,5(20,0-26,0)	
switch-off elect.	400	0	
Idle stop	425	(4,0-12,0)	
	650	max. 6,0	
	1200	max. 5,0	
End stop	400	min.18,0	
	500	max.23,5	

2.4 Solenoid — max. cut-in voltage xx min. 10,0 V
test voltage xxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*FH	1,8-2,4
A	
B	

Observations
*operating stroke (KSB)

7.83

A3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 V 7

1. Edition

En

VE 4/9 F 2400 R 138-3

0 460 494 148

supersedes–
company: VWW
engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,9-3,3	mm		
1.2 Supply pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
1.4 Idle speed regulation	425	6,0-10,0	cm³/1000 strokes		2,0
1.5 Start	100	min. 35,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2600	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,3-2,1(1,0-2,4)	(2,4-3,8)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,0-7,6
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0		
	2600		(10,0-18,0)	
	2400	27,5-29,5	(26,3-30,7)	
	1500		(31,3-35,7)	
	600	21,5-24,5	(20,0-26,0)	
switch-off elektr.	400	0		
mach.	2400	0		
Idle stop	425		(4,0-12,0)	
	650	max. 5,0		
	1200	max. 7,0		
End stop	400	min. 18,0		
	500	max. 23,5		

2.4 Solenoid	max. cut-in voltage	xxx min. 10,0 V
	test voltage	xxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*PH	1,8-2,4
A	
B	

Observations

*operating stroke (KSB)

A4

A4

⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 W 3
1. Edition

En

VE 4/9 F 2250 R 149 Overflow temperature 45° C
0 460 494 138

supersedes
company: VWW
engine: 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

Testoil-ISC 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,8-4,2	mm	0,75 bar	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75 bar	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75 bar	2,5
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes	0	2,0
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm³/1000 strokes	0,75 bar	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1000	1500	2250
	mm	1,8-2,6(1,5-2,9)	(3,3-4,7)	6,1-6,9(5,8-7,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600		2250
	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min	600		2250
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 3,0		0,75 bar
	2525		(8,0-16,0)	0,75 bar
	2250	38,5-40,5	(37,3-41,7)	0,75 bar
	1500		(41,8-46,2)	0,75 bar
	1000	33,5-34,5	(31,8-36,2)	0,3 bar
	600		(21,0-27,0)	0
switch-off electr.	400	0		
Idle stop	475		(4,0-12,0)	
	1200	max. 5,0		
End stop	400	min. 22,0		
	500	max. 30,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	4,4
** FH	1,8-2,4
~~X~~K	18,4-20,4
~~X~~L	8,6-12,0

Observations

* LDA-stroke 4,0 mm
Use adjusting nut (46) to correct.

** operating stroke (cold-start accel.)

BOSCH

A5

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 w 4

1. Edition

En

VE 4/9 F 2250 R 149-2

0 450 494 146

supersedes

company VWW

engine: 086 T

Testöl-ISO 4113

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,8-4,2	mm	0,75 bar	
1.2 Supply pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75 bar	
1.3 Full-load delivery without charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
Full-load delivery with charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75 bar	2,5
1.4 Idle speed regulation	425	6,0-10,0	cm³/1000 strokes	0	2,0
1.5 Start	100	min. 35,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0	cm³/1000 strokes	0,75 bar	
1.7 Load-dependent start of delivery	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1000	1500	2250
	mm	1,8-2,6(1,5-2,9)	(3,3-4,7)	6,1-6,9(5,8-7,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600		2250
	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min	600		2250
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2750	max. 3,0		0,75 bar
	2525		(8,0-16,0)	0,75 bar
	2250	38,5-40,5	(37,3-41,7)	0,75 bar
	1500		(41,8-46,2)	0,75 bar
	1000 *	33,5-34,5	(31,8-36,2)	0,3 bar
	600		(21,0-27,0)	0
switch-off elect.	400	0		
Idle stop	425		(4,0-12,0)	
	1200	max. 5,0		
End stop	400	min. 22,0		
	500	max. 30,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V xxxxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	4,4
**FH	1,8-2,4
XK	18,4-20,4
B XL	8,6-12,0

Observations

Manifold-pressure compensator stroke = 4,0 mm.

Correction at the adjusting nut.(46)

*operating stroke (KSB)

A6

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,0 i 4

1. Edition

En

VE 5/10 F 2250 L 150

0 460 405 033

supersedes
company VWW
engine: 153 T

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm	0,75 bar	
1.2 Supply pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75 bar	
1.3 Full-load delivery without charge-air pressure	500	21,5-22,5	cm³/1000 strokes	0	
Full-load delivery with charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75 bar	2,5
1.4 Idle speed regulation	375	6,0-10,0	cm³/1000 strokes	0	2,0
1.5 Start	100	min. 50,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0	cm³/1000 strokes	0,75 bar	
1.7 Load-dependent start of delivery	-				

2. Test Specifications checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	850	1500	2250
	mm	1,1-1,9(0,8-2,2)	(2,6-4,0)	5,4-6,2(5,1-6,5)
2.2 Supply pump LDA=0,75 bar	n = rev/min	500		2250
	bar (kgf/cm²)	3,2-3,8		7,3-7,9
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	max. 3,0		0,75 bar
	2525		(8,0-16,0)	0,75 bar
	2250	37,0-39,0	(35,8-40,2)	0,75 bar
	1500		(41,8-46,2	0,75 bar
	850 *	32,5-33,5	(30,8-35,2)	0,3 bar
	500		(19,0-25,0)	0
switch-off elektr.	400	0		
idle stop	375		(4,0-12,0)	
	450	max. 3,0		
End stop	400	min. 18,0		
	500	max. 25,0		

2.4 Solenoid	max. cut-in voltage xxx min. 10 V xxxxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	4,2
A	
B	

Observations

Adjust TAS only at full LDA pressure of 0.75 bar
Manifold-pressure compensator stroke = 3,6mm
Correction at the adjusting nut (46).

A7

47

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.
© 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

7.83

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,0 i 5
1. Edition

En

VE 5/10 F 2250 L 150-1
0 460 405 034

supersedes-
company: VWW
engine: 153 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

Test-No. 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm	0,75 bar	
1.2 Supply pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75 bar	
1.3 Full-load delivery without charge-air pressure	500	21,5-22,5	cm³/1000 strokes	0	
Full-load delivery with charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75 bar	2,5
1.4 Idle speed regulation	375	6,0-10,0	cm³/1000 strokes	0	2,0
1.5 Start	100	min. 50,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0	cm³/1000 strokes	0,75 bar	
1.7 Load-dependent start of delivery	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	850	1500	2250
	mm	1,1-1,9(0,8-2,2)	(2,6-4,0)	5,4-6,2(5,1-6,5)
2.2 Supply pump LDA=0,75 bar	n = rev/min	500		2250
	bar (kgf/cm²)	3,2-3,8		7,3-7,9
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	max. 3,0		0,75 bar
	2525		(8,0-16,0)	0,75 bar
	2250	37,0-39,0	(35,8-40,2)	0,75 bar
	1500		(41,8-46,2)	0,75 bar
	850 *	32,5-33,5	(30,8-35,2)	0,3 bar
	500		(19,0-25,0)	0
switch-off				
mech.	2250	0		
elektr.	400	0		
Idle stop	375		(4,0-12,0)	
	450	max. 3,0		
End stop	400	min. 18,0		
	500	max. 25,0		

2.4 Solenoid — max. cut-in voltage xx min. 10 V
test voltage XXXXXXXXX rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	4,2
A	
B	

Observations

Adjust TAS only at full LDA pressure of 0.75 bar
Manifold-pressure compensator stroke = 3,6mm
Correction at the adjusting nut (46).

A8

A8

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4K 1

1. Edition

En

VE 6/10 F 2150 L 151

0 460 406 039

supersedes
company: VWW
engine: 087

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply pump pressure	1500	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	28,0-29,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0	cm³/1000 strokes		2,0
1.5 Start	≥ 100	min. 35,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2400	9,0-15,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2150
	mm	0,7-1,5 (0,4-1,8)	(2,3-3,7)	4,9-5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min	600		2150
	bar (kgf/cm²)	3,0-3,6		7,3-7,9
Overflow delivery	n = rev/min	600		2150
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2600	max. 3,0	
	2400	(8,0-16,0)	
	2150	23,0-25,0 (21,8-26,2)	
	1500	(26,3-30,7)	
	750	25,0-28,0 (23,5-29,5)	
switch-off elect.	400	0	
Idle stop	375	(4,0-12,0)	
	450	max. 3,0	
End stop	400	min. 25,0	
	500	max. 27,0	

2.4 Solenoid — max. cut-in voltage xxx min. 10 V xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,7
MS	1,4-1,6
SVS	max. 2,6
* FH	1,8-2,4
A	
B	

Observations

*operating stroke (KSB)

9.83

A9

A9

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP-001/4 VWW 2,4 ■

1. Edition

En

VE 6/10 F 2150 L 152

0 460 406 040

supersedes
company: VW
engine: 087 T-LT

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,3-2,7	mm	0,75	
1.2 Supply pump pressure	1500	5,9-6,5	bar (kgf/cm²)	0,75	
1.3 Full-load delivery without charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
Full-load delivery with charge-air pressure	1500	41,5-42,5	cm³/1000 strokes	0,75	2,5
1.4 Idle speed regulation	375	6,0-10,0	cm³/1000 strokes	0	2,0
1.5 Start	100	min. 35,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	2400	9,0-15,0	cm³/1000 strokes	0,75	
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1000	1500	2150
	mm	0,5-1,3(0,2-1,6)	(1,8-3,2)	4,4-5,2(4,1-5,5)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600		2150
	bar (kgf/cm²)	3,5-4,1		7,6-8,2
Overflow delivery	n = rev/min	600		2150
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 3,0		0,75
	2400		(8,0-16,0)	0,75
	2150	35,0-37,0	(33,7-38,3)	0,75
	1500		(39,5-44,3)	0,75
	750 *	32,5-33,5	(30,7-35,3)	0,3
	600		(21,7-26,3)	0
elect. switch-off	70-400	0		
Idle stop	450	max. 3,0		
	375		(4,0-12,0)	
End stop	400	min. 25,0		
	500	max. 27,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,0-1,2
** SVS FH	3,8 1,8-2,4
A	
B	

Observations:
Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. (46)
*operating stroke (KSB)

A10

A10

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 HOR 2,0 b

4. Edition

En

supersedes 8.82

PES 2 A 80D 410/3 RS 1329 RSV 400-1250 A0B 1123 L
Komb.-Nr. 0 400 462 053

company: Holder
engine: VD 6001/2

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Port closing difference between control-rod travel 9 and max. = 9-9,9°

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7-1,8 (1,65-1,85) mm (from BDC) RW=7,5-10,5mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,7-9,8	6,0-6,1	0,2 (0,35)			
400	6,7-6,9	0,9-1,5	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 20	400	6,5	-	-
	X = 3,75						100	min 19,5		
							400	6,7-6,9		
							505-565= 2,0			
(5) ca.46	8,7	1290-1300								
	4,0	1330-1360								
	1495	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	(5a) Idle stop rev/min 8	Control rod travel mm 9
1250	59,5-60,5 (58,0-62,0)	1290-1300*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

A11

BOSCH

Ges... ...ereich KH, Kundendienst, Kfz-Ausrüstung.
© by ... Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

A11

(1A)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MWM 3,1a
2. Edition

En

PES 3 A 80 D 320 RS 1338 RSV 300-1000 A 7 B 505-1R
Komb.-Nr. 0 400 473 086

supersedes 8.82
company: MWM
engine: D 226-3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke 2,2-2,3 (2,25-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
980	9,7-9,8	4,8-4,9	0,2(0,35)			
300	7,4-7,6	0,8-1,4	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	300	7,0	-	-
	X = 6,0						100	min.19,5		
(5a) ca.63	8,7	1020-1030					300	7,4-7,6		
	4,0	1050-1080					395-455	=2,0		
	1205	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
980	48,0-49,0 (46,5-50,5)	1020-1030*	600	40,5-43,5 (39,0-45,0)	100	93,5-109,5 bei 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

A12

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

A12

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MAN 9,7 L2

3. Edition

En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2108 EP/RSV 200-1100 A1 B 607L

200-1050 A1 B 607L
450-1050

supersedes 8.80
company MAN - RABA
engine D 2156 ..

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	8,4 - 9,4				
	6	4,0 - 5,0				
	15	16,6 - 17,8				
200	9	5,9 - 6,9				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

200-1100

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 60	1100	16,0		ca. 24	200	6,0	1080	0
	1150	11,0						
	1180	6,4	without auxiliary spring		100	19 - 21		
					200	5,7-6,3	250	1,2 - 1,8
	1140	10,4-12,8			300	2,2-4,1		
(2a)	1180	4,0-8,4	with auxiliary spring		450	0 - 1		
	1300	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	93,5 - 96,4	1140-1150*			100	min. 20,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.83

913

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	1050 1120 1160	16,0 9,8 5,0	without auxiliary spring			ca.26	200	6,0	1030	0
	1120 1180 1260	8,0-11,8 2,0- 4,5 0,3- 1,0	with auxiliary spring				100 200 300 420	19-21 5,7-6,3 2,0-3,9 0 -1,0	250	1,2-1,8
(5)										

(1A)

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)								Control rod travel
rev/min	cm^3/1000 strokes	Note: changed to ... rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1100	93,5-96,4	1140-1150*	- (6a)	-	100	min. 20,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

450-1050

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	1050 1100 1150	16,0 11,7 6,5	without auxiliary spring			ca.32	450	6,0	1050	0
	1120 1200 1300	8,5-11,0 2,1- 4,7 0,3- 1,0	with auxiliary spring				100 450 550 580	19-21 5,7-6,3 2,3-4,0 0-1,0	300	0,8-1,4
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)								Control rod travel
rev/min	cm^3/1000 strokes	Note: changed to ... rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1050	133,5-139,5	1080-1090*	750	135,5-139,5	100	min. 20,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

A14

AAY En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MAN 9,7 1 5
1. Edition

En

PES 6 A 95 D 410 RS 2108 RSV550-1100 A 1 B 607 L

supersedes

company MAN

Komb.-Nr. 0 400 876 235

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7-1,8 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	9,4-9,5	0,3(0,6)			
550	5,9-6,1	1,6-2,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.29	550	5,5	1100	10,2-10,3
	X = 2,25						100	min.19,5	500	10,2-10,4
ca.56 (2a)	9,2	1140-1150					500	5,9-6,1	370	11,3-11,9
	4,0	1155-1185					660-720	= 2,0		
	~~1350~~	~~0,3-1,7~~								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	94,0-95,0 (92,0-97,0)	1140-1150*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

A15

A15

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 TOP 19,0 a
1. Edition
En

PE 12 A 85 D 610 RS 2141 RSV 200-1100 A1B 253 DL

Komb.-Nr. 0 400 670 005

supersedes -
company Torpedo
engine T 519

1-12-4-9-2-11-6-7-3-10-5-8
0-45-60-105-120-165-180-225-240-285-300-345° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	8,7-8,8	0,3(0,45)			
500	12,8+0,1	8,2-8,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.24	200	5,5	1000	12,4-12,5
	X = 6,0						100	min.19,0	500	12,8-12,9
							200	5,9-6,2	800	12,7-12,9
ca.55 (2a)	11,4	1040-1050					420-480	= 2,0		
	4,0	1155-1185								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	86,5-87,5 (84,5-89,5)	1040-1050*	500	82,0-84,0 (80,0-86,0)	-	-	-	-
			700	87,5-90,5 (85,5-92,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 q 5
3. Edition

En

PES 6 A 90 [illegible] 410 RS 2293 RSV 350-1400 A 0 B 788 DL

supersedes 8.82
company Daimler-Benz
engine OM 352 A
124 kW (168 PS)
Unimog

Komb.-Nr. 0 400 876 258
H = 22,5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,3+0,1	7,4 - 7,5	0,3(0,45)			
350	6,7-6,9	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	19-21	350	6,3	1400	11,3-11,4
	x = 5,0								500	11,5-11,6
67-70	10,3	1440-1450					100	min.19,0		
	4,0	1500-1530					350	6,7-6,9		
(2a)	1600	0,3-1,7					530-590	= 2,0		
							700	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,5 bar	1440-1450*	LDA	0,5 bar	100	13,7-14,3	-	-
1400	74,0-75,0		500	62,0-64,0		mm RW		
	(72,0-77,0)			(60,0-66,0)				
			LDA	0 bar				
			500	54,0-56,0				
				(52,0-58,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

A17

A17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6A.. RS 2293		0	10,8 - 10,9
with ..A0B 788 DL		0,29	11,1 - 11,2
	0,50		11,5 - 11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at	0,4 - 0,5 bar
Unlocking at	0,15 - 0,25 bar

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 8
1. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-1200 A08 1101-1 L
Komb.-Nr. 0 400 876 316

supersedes
company Daimler-Benz
engine OM 352
70 kW (95 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	8,4-8,5	4,5-4,6	0,3(0,45)			
350	7,1-7,3	0,8-1,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	-	350	7,2	1200	8,4-8,5
	X = 4,0								600	9,8-9,9
							350	7,1-7,3	800	9,5-9,7
ca.65	7,4	1225-1235					475-535	= 2,0	1000	8,9-9,2
(2a)	4,0	1290-1320								
	1400	0-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1200	45,0-46,0 (43,0-48,0)	1220-1230*	600	45,0-47,0 (43,0-49,0)	100	78,0-88,0 = 14,9-15,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.83

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

A19

419

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 q 3
6. Edition
En

Testoil-ISO 4113

PES 6A 90D 410RS 2293 RSV 350-1300A0B1105DL(1)

Komb.-Nr. 0 400 876 260

supersedes 2.82
company: Daimler Benz
engine: OM 352
92 kW(125PS)(1)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10 - 2,30) / 2,15 - 2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,5-9,6	6,2 - 6,3	0,3(0,45)			
350	6,3-6,5	0,4 - 0,9	0,2(0,4)			
800	10,2+0,2	C.Sp. 4-5	0,4(0,55)			
500	10,3+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca.28	350	5,9	1300	9,5-9,6
	X =	5,5					100	min.19,0	800	10,2-10,4
(5) ca. 64	8,5	1340-1350					350	6,3-6,5	500	10,3-10,4
	4,0	1380-1410					700	max.1,0		
	1550	0,3-1,7				490+	550	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1300	62,5 - 63,5 (60,5 - 65,5)	1340-1350*	800	60,0 - 62,0 (58,0 - 64,0)	100	79,25-89,25 bei 13,7-14,3 mm RW	350	6,4
			500	54,0 - 56,0 (52,0 - 58,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

BOSCH
Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

9 20

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 9,6 k
1. Edition

PES 6 A 95 D 410 RS 2416 En RSV 325-1100 A 8 B 2040 L

Komb.-Nr. 0 400 876 279

supersedes -
company KHD
engine BF6L413 FRC

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,75-1,85 (1,70-1,90) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,6+0,1	11,2-11,4	0,3 (0,6)			
325	5,4-5,6	0,9-1,5	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	- - -	ca.16	325	5,5	1100	10,6-10,7
	X = 4,0				100	min.19,0	550	10,6-10,8
					325	5,9-6,1	375	11,8-12,4
ca. 49 (2a)	9,6	1140-1150			440-500	= 2,0		
	3,7	1165-1195			600	max. 1,0		
	1330	0,3-1,7						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,5 bar	1140-1150*	LDA	0,5 bar	100	120,0-130,0	-	-
1100	111,5-113,5		900	114,0-117,0		= 13,4 -		
	(109,5-115,5)			(112,0-119,0)		14,0 mm		
			LDA	0 bar		RW		
			500	77,5-80,5				
				(75,5-82,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.83

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

A21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES6A..RS2416 + RSV..A8B 2040L	0,24	0,49 0,35 0	9,6-9,9 10,6-10,7 10,3-10,4 9,5-9,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 GMC 7,8 a
1. Edition

En

PES 6 A 90 D 410 LS 2436 RSV 400-1250 A2B 725 DL

1 - 6 - 5 - 4 - 3 - 2

Komb.-Nr. 0 400 876 215

supersedes -
company GMC
engine DH-478
110 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0-9,1	5,2-5,5				
	12,0+0,2	8,0-8,8				
200	9,0-9,2	2,3-3,1				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.48	1250 16,0 1350 7,0 1400 1,8					ca.19	400	5,5	1230	0
			without auxiliary spring				200	19,0-21,0	800	0,5-0,7
	1300 10,8-12,5 1360 4,1-7,5 1530 0,3-1,0						400 550 700	5,2-5,8 1,5-3,4 0-1,0	500	0,8-1,0
(2a)			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to .) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1250	71,5-72,5 (69,5-74,5)	1280-1290*	500	60,5-63,5 (58,5-65,5)	100	mind. 99,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

A23

A23

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 KHD 12,7 r
1. Edition

En

PE 8 A 95 D 410 LS 2451 RSV 300-1325 A 8B 1002 supersedes -
Komb.-Nr. 0 400 673 040 company KHD
engine F 8 L 413 F

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45° ±0,5° (±0,75°)

(1) 173 kW (235 PS) bei n=2650min^{-1}
(2) 157 kW (213 PS) bei n=2300min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1325	9,7-9,8	9,2-9,4	0,3(0,6)			
300	5,9-6,1	0,9-1,5	0,5(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 X = 4,75		-	-	-	ca.20	300	6,0	1325	9,7-9,8
ca.63	8,7 1365-1375						100	min19,0	500	10,0-10,1
(2a)	4,0 1420-1450						300	5,9-6,1		
	1575 0,3-1,7						520-580	= 2,0		
							700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1325	91,5-93,5 (89,5-95,5)	1365-1375*	-	-	100	116,5-127,5 =14,0-14,4 mm RW	-	-
(2) 1150	83,0-85,0 (81,0-87,0)	1190-1210*						

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

A24

A24

Test Specifications Fuel Injection Pumps and Governors

(1A)

40

WPP 001/4 MWM 6,2 c 2
1. Edition

En

PES 6 A 90 D 320/3 RS 2464-1 RSV 325-1200 A0B 2182 R

supersedes -
company MWM TD 226-6
engine 107 kW

Komb.-Nr. 0 400 866 115

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,6+0,1	7,5-7,6	0,3(0,45)			
325	7,4-7,6	0,5-1,5	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Port closing difference between control-rod travel 9mm and max. = 3,5 - 4,5° camshaft

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 X =	0,3-1,0	-	-	-	ca.20	325	7,0	1180	10,6-10,7
									500	11,5-11,6
							325	7,4-7,6	875	11,0-11,2
ca.46 (2a)	9,6	1240-1250					520-580	= 2,0		
	4,0	1300-1330								
	1460	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes (5) 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 74,5-75,5 (72,5-77,5)	1240-1250*	LDA 500	0 bar 59,5-60,5 (57,5-62,5)	100	113,0-123 (110,0-126,0) = 19,5-21,0 mm RW	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

B1

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

B1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6A..RS2464-1 + RSV..AOB2182R	0,70	0 0,14 0,13	11,5-11,6 11,0-11,1 11,3-11,4 11,1-11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B2

En B2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DEE 7,6 c 1
1. Edition
En

PES 6 A 95 D 410 RS 2522 RSV 400-1100 A 2 B 2009 DL

supersedes

company John Deere

engine 6466 T

Komb.-Nr. 0 400 876 268

Use overflow valve 1 413 385 007

Suction-gallery pressure 1,5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,85-1,95 (1,80-2,00) mm (from BDC) Zyl. 1;

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	9,6 - 9,8	0,3			
400	6,1-6,3	1,2 - 1,6	0,3			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Port closing mark 15,5° camshaft after port closing of cylinder 1.

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	400	5,6	1100	10,2+0,1
	x =								650	11,1+0,1
ca. 48	9,2	1145-1155					100	19,0-21,0		
(2a)	5,1	1200-1230					400	5,9-6,1		
	1300	0,3-1,7					480-540	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	1,2 bar 95,0- 98,0 (93,0-100,0)	1145-1155*	LDA 650	1,2 bar 104,0-108,0 (101,0-111,0)	100	162-182	-	-
					400	12,0-16,0		
			LDA 500	0 bar 74,0-78,0 (71,0-81,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

B3

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 c 1

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2522 + RSV..A2B2009DL	0,24	0,14	10,9 - 11,0 10,3 - 10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B4

n 84

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 DEF 7,6 c 40

1. Edition

En

PES 6 A 95 D 410 RS 2522 RSV 400-1100 A 2 B 2009-1 L

supersedes -

company John Deere

engine 6.466 TL

Kom.-Nr. 9 400 230 041

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,85-1,95 (1,8-2,0) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,5-9,6	8,7-8,9	0,3			
400	5,7-5,9	1,2-1,6	0,3			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	400	5,2	1100	9,5
ca. 48 (2a)	8,5 4,0 1300	1145-1155 1195-1225 0,3-1,7					100 400 480-540 650	min.19,0 5,6-5,8 = 2,0 max. 1,0	750 500	10,3-10,6 9,5-9,6

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 87,0-89,0 (85,0-91,0)	1145-1155*	LDA 750	0,7 bar 97,5-101,5 (95,0-104,0)	100	16,2-18,2 = 21 mm RW	-	-
			LDA 500	0 bar 74,0-78,0 (71,0-81,0)	400	12,0-16,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

B5

B5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
PES 6A..RS 2522 + RSV..A2 B 2009-1 L	0,24	0,14	10,2-10,3 9,6-10,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 DAF 8,3i
4. Edition
En

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2524 RQ 225/1200 AB 1008 L
Komb.-Nr. 0 400 646 251

supersedes 11.82
company: DAF
engine: DH 825

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,25-2,45) 2,30-2,40 RW9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,0 - 7,1	0,3(0,45)			
225	6,5-6,7	0,9 - 1,5	0,2(0,4)			
		Port closing difference between and max. = 4,5 - 5,5° camshaft		control-rod travel 9mm		

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	8,4	1245-1260	225	8,7	100	min.10,2	-	-
				4,0	1325-1355						
VH =	max. 46°			1500	0 - 1,0			225	8,6 - 8,8		
								410-450=2.0			
								550	max. 1,0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/–1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/–1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1000	70,0 - 71,0 (68,0 - 73,0)	600	-	-	100	128,0-138,0 (125,0-141,0) = 19,5 - 21,0 mm RW

Checking values in brackets

6.83

B7

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 i 1
5. Edition
En

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2524 RSV 250-1200 A 5 B 2012 DL supersedes 8.82
company: DAF
engine: DH 825
Robert Bosch-Nr. 0 400 676 151

Cold start test on EP/RSV governor according to Service Information. Specifications apply to test tubing 1 680 750 015.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,25-2,45) 2,30-2,40 RW 9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,0 - 7,1	0,3(0,45)			
250	6,5-6,7	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.16	250	5,5	1000	9,4-9,5
	X	3,0							400	9,4-9,6
							250	5,9-6,1	300	9,5+0,5
(5) ca. 49	1240-1250 = 8,4 1260-1290 = 4,0 1480 = 0,3-1,7						580-640=2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	70,0 - 71,0 (68,0 - 73,0)	1240-1250*	-	-	100	128,0-138,0 (125,0-141,0) = 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

B8

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B8

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 x 6
2. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-750 A0B 741 L
Komb.-Nr. 0 400 876 300

supersedes 11.82
company Daimler-Benz
engine OM 352
52 kW (71 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,2+0,1	5,4 - 5,5	0,3 (0,45)			
350	7,4-7,6	0,5 - 1,1	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.15	350	7,5	-	-
	x = 2,0						100	min.19,5		
ca.26	10,2	750-755					420-480	= 2,0 **		
(2a)	4,0	788-801					550	max. 1,0		
	835	0,3-1,7								

** Set auxiliary idle spring at 2.0 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	54,0-55,0 (52,0-57,0)	750-755 *	-	-	100	78,0-88,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 n 9
3. Edition
En

PES 4 A 90 D 410 RS 2570 RQV 300-1400 AB 1111-3L
Komb.-Nr. 0 400 844 081

supersedes 82
company Daimler-Benz
engine: OM 314
57 kW (77 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,5+0,1	5,9 - 6,0	0,3(0,45)			
300	8,6-8,8	1,1 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca. 24	100	min.10,2	250	0,7-0,9
							300	8,6-8,8	630	4,8-4,9
ca.63	9,5	1440-1450							1020	5,3-5,4
	4,0	1535-1565					545-605 = 2,0		1400	7,7
	1650	0 - 1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	59,0-60,0 (57,0-62,0)	1440-1450*	400	44,0-46,0 (42,0-48,0)	100	71,0-81,0 (68,0-84,0)	1400	10,5+0,1
							400	11,4+0,1
							600	11,1+0,2
							1000	10,8+0,3
						220 (240)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

B10

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

B10

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,8 n 10

1. Edition

En

PES 4 A 90 D 410 RS 2570 RSV 350-1300 A 2 B 1126-2 L

Komb.-Nr. 0 400 874 237

supersedes Daimler-Benz
company OM 314
engine 55 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,2+0,1	6,5-6,6	0,3(0,45)			
350	8,9-9,1	0,9-1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		350	8,5	1300	11,2-11,3
	x = 4,0						100	min.19,5	500	11,9-12,1
							350	8,9-9,1	700	11,5-11,8
ca. 46 (2a)	10,2	1340-1350					595-655	=2,0		
	4,0	1420-1450								
	1550	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to .) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	65,0-66,0 (63,0-68,0)	1340-1350*	500	53,0-57,0 (51,0-59,0)	100	78,0-88,0 (75,0-91,0)	350	8,5 **

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Adjusting the idle-speed auxiliary spring

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

B11

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 n l
2. Edition
En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2575 RSV 250-1200 A5B 2151 L
supersedes 8.82
company DAF
engine DH 825
Komb.-Nr. 0 400 676 171
Specifications apply to test tubing 1 680 750 015 015
See Service Information VDT-I-DAF 004.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,4+0,1	7,3 - 7,5	0,35(0,6)			
250	6,0-6,2	0,7 - 1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5,6	1200	10,5+0,1
	X =	5,0					250	6,0-6,2	500	11,1+0,1
							635-695	= 2,0	800	11,1+0,1
(5) ca.58	9,4	1240-1250							940	10,7+0,3
	4,0	1340-1370								
	1505	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	73,0-75,0 (71,0-77,0)	1240-1250*	800	74,5-77,5 (72,0-80,0)	100	121,5-131,5 bei 19,5-21,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

B12

Test Specifications Fuel Injection Pumps and Governors

(1A)

40

WPP 001/4 DAF 8,3 n 2

1. Edition

En

PE 6 A 95 D 410 RS 2575 Y RSV 250-750 A 7 B 2124 L

Komb.-Nr. 0 400 676 172

supersedes –
company DAF
engine DHTD 825

Specifications apply to test tubing 1 680 750 015
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 7,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	10,1-10,3	0,4(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

POrt closing difference between control.rod travel 9 mm and max. = 3 - 4° camshaft

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 19	250	6,1	-	-
	x = 4,25						250	6,0-6,2		
ca. 45 (2a)	11,5	770-780					260-320	=2,0 **		
	4,0	795-815								
	995	0,3-1,7								

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2,0 mm control-rod travel, then 1/2 turn back.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	100,5-102,5 (98,5-104,5)	770-780*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

B13

B13

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 K 2
3. Edition
En

PES 6 A 85 D 410 RS 2592 RQV 300-1250 AB 1158 L

Komb.-Nr. 0 400 846 497

supersedes 3.83
company: KHD
engine: BF 6 L 913
GMC-Fahrzeug
118 kW (160 PS)
/ 2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC) 9,0-12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,5+0,1	8,4-8,5	0,3 (0,45)			
300	8,3-8,5	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	ca.17	100	min.10,2	250	0,5-0,8
							300	8,3-8,5	580	3,6-3,7
ca. 66	11,5	1290-1300							920	5,3-5,4
	4,0	1375-1405							1250	8,1
	1500	0 - 1,0				450-575 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1290-1300*	LDA 800	0,7 bar 80,5-82,5 (78,0-85,0)	100	102,0-112,0 (99,0-115,0) = 16,9-17,3 mm RW	1250	12,5+0,1
							500	13,2+0,1
1250	83,5-84,5 (81,5-86,5)						800	13,2+0,1
							1000	12,9+0,2
							1100	12,7+0,3
			LDA 500	0 bar 59,0-61,0 (56,5-63,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

B14

B14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2592 + RQV..AB 1158 L	0,70		13,2 - 13,3
		0	11,8 - 11,9
		0,48	12,8 - 12,9
		0,33	11,9 - 12,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B15

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 k 3

2. Edition

En

PES 6 A 85 D 410/3 RS 2592 RQV 300-1250 AB 1188 L

Komb.-Nr. 0 400 836 028

superseded 6.83

company KHD

engine BF 6 L 913

118 kW/2500 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing =t prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,0+0,1	8,9-9,0	0,3(0,5)			
300	6,9-7,1	0,9-1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	ca. 13	300	6,9-7,1	325	1,5-1,7
									850	4,9-5,1
									1150	7,1-7,3
ca. 65	11,0	1290-1300				355-470			1400	9,9
	4,0	1375-1405				(3a)				

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 88,5-89,5 (86,5-91,5)	1290-1300*	LDA 500	0,7 bar 73,0-75,0 (70,5-77,5)	100	110,0-120,0 (107,0-123,0) =17,1-17,5 mm RW	1250	12,0+0,1
							500	12,8+0,1
							775	12,5+0,2
			LDA	0 bar 59,0-61,0 (57,0-63,0)			1025	12,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

B16

BOSCH

Geschäftsbereich KH. Kundendienst, Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 k 3

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 2592 + RQV..AB 1188 L	0,70	0 0,26 0,19	12,8-12,9 10,9-11,1 12,4-12,5 11,9-12,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 v 11
2. Edition
En

PES 6 A 90 D 410 RS 2596 RSV 350-1400 AOB 1141 L
Komb.-Nr. 0 400 876 293

supersedes 8.82
company Daimler-Benz
engine OM 352 A
123 kW (157 PS) (1)
Schmidt rotary (2)
snow plough for high altitudes

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1380	12,3+0,1	7,9-8,0	0,3(0,45)	9,8-9,9	5,4-5,6	
350	7,9-8,1	0,9-1,5	0,2(0,4)	7,9-8,1	0,9-1,5	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	max. 14				
	x =	5,75					350	7,9-8,1		
ca.60 (2a)	11,3	1420-1430					580-640	= 2,0		
	4,0	1520-1550								
	1680	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1380	(1) 0,7 bar 79,0-80,0 (77,0-82,0)	1420-1430*	LDA 600	0,7 bar 76,5-79,5 (74,5-81,5)	100	78,0-88,0	-	-
			LDA 500	0 bar 51,5-52,5 (49,5-54,5)		16,4 - 16,8 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

B18

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 x 6,0	0,3-1,0	-	-	-	ca.31	350	8,0	1200	9,8-10,0
							100	19,0-21,0	650	11,3-11,5
							350	7,9-8,1		
ca.74	8,8	1440-1450					440 - 600	490 = 2,0		
(2a)	4,0	1470-1500						0,3-1,0		
	1635	0,3-1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) LDA 1380	0,7 bar 54,5-56,5 (52,5-58,5)	1440-1450*	LDA 1000	0,7 bar 60,2-62,2 (58,2-64,2)	300	78,0-88,0 16,4 - 16,8 mm RW	-	-
			600	65,2-67,2 (63,2 69,2)				
			LDA 500	0 bar 53,0-55,0 (51.0-57,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A RS 2596		0,70	13,3 - 13,4
		0	11,4 - 11,5
(1)	0,52		13,0 - 13,1
		0,21	11,8 - 12,0
		0,70	12,3 - 12,4
(2)		0	10,4 - 11,5
	0,52		12,0 - 12,1
		0,21	10,8 - 11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En Testing the hydraulic start-locking device

Locking at 0,45 - 0,55 bar

Unlocking at 0,25 - 0,35 bar

B19

B19

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 v 12
2. Edition
En

PES 6 A 90 D 410 RS 2596 RSV 350-1200 AOB 1148 L

Komb.-Nr. 0 400 876 310

supersedes 8.82
company Daimler-Benz
engine OM 352 A
110 kW (150 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1200	12,2+0,1	7,4-7,5	0,3(0,45)			
350	8,1-8,3	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27			1200	12,2-12,3
	x =	5,0					100	min.19,0	600	13,2-13,3
							350	8,1-8,3	950	12,6-12,9
ca.62	11,2	1240-1250					500 -	560=2,0		
(2a)	4,0	1385-1415								
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1240-1250*	LDA	0,7 bar	100	78,0-88,0	-	-
1200	74,0-75,0		600	73,0-75,0		16,1-		
	(72,0-77,0)			(71,0-77,0)		16,5mmRW		
			LDA	0 bar				
			500	52,0-53,0				
				(50,0-55,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

B20

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 2596		0,70	13,2 - 13,3
with..A0B 1148 L		0	11,5 - 11,6
	0,45		12,8 - 12,9
		0,24	12,2 - 12,4

Notes

(1) when n = rev/min and gauge pressure = bar (maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at	0,75 - 0,85 bar
Unlocking at	0,25 - 0,35 bar

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 x 3
2. Edition

En

PES 6 A 90 D 410 RS 2596 RSV 350-1400 A0B 1148 L

Komb.-Nr. 0 400 876 313

supersedes 8.82
company Daimler-Benz
engine OM 352 A
115 kW (156 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,3+0,1	7,1-7,2	0,3(0,45)			
350	7,9+0,2	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.21	350	7,5	1380	11,3+0,1
	x =	5,0					100	min.19	800	12,3+0,1
ca.64	1430 - 1440	=10,3					350	7,9-8,1	1200	11,6+0,1
(2a)	1510 - 1540	= 4,0					530 - 590	= 2,0		
	1620 =	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1380	0,7 bar 71,0-72,0 (69,0-74,0)	1430-1440*	LDA 700	0,7 bar 67,0-69,0 (64,5-71,5)	100	78,0-88,0		
			LDA 500	0 bar 58,0-59,0 (56,0-61,0)		15,6 - 16,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
RS 2596 with AOB 1148 L	0,70		12,3 - 12,4
		0	11,8 - 11,9
		0,38	12,0 - 12,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at	0,40 - 0,50 bar
Unlocking at	0,25 - 0,35 bar

Test Specifications Fuel Injection Pumps and Governors

(1) VPP 001/4 MAN 15,0d

2. Edition

En

PE 10A 95D 520/5 LS 2604 RQV 250-1150 AB1104 R

Komb.-Nr. 0 400 649 221

supersedes 80

company MAN

engine D 2840 MF 268kw (364 PS)

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2

0 - 45- 72-117-144-189-216-261-288-333° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,65-1,85) 1,70-1,80 mm (from BDC) Zyl. 10; RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,0+0,1	12,5 - 12,7	0,3(0,6)			
250	6,9-7,1	0,9 - 1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.12 (3a)	100	min.8,5	200	0,5-0,7
							250	6,9-7,1	520	4,6-4,9
ca.66	12,0	1190-1200							830	5,8-6,1
	4,0	1280-1310							1150	7,8
	1355	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	124,5-126,5 (122,5-128,5)	1190-1200*	650	113,5-117,5 (111,5-119,5)	100	15,9-16,5 mm RW	1150	13,0+0,1
			500	max. 118,5 (max.120,5)			500	13,5+0,1
							1010	13,4+0,2
							1080	13,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B24

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 g 6

3. Edition

En

Testoil-ISO 4113

PES 4 A 85 D 410/3 RS 2610 RSV 325-1150 A 8 B 2102 L
A 8 C 2102 L

1 - 3 - 4 - 2 je 90°±0,5° (±0,75°)

Komb.-Nr. 0 400 864 051

supersedes 6.83

company: KHD

engine: F 4 L 913
55 kW (75 PS)
Schlepper D 7807 - S 16

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	6,8 - 6,9	0,3(0,45)			
325	8,7-8,9	0,9 - 1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.17	325	8,3	1150	1,3-11,4
	x = 3,5								900	1,6-11,9
ca.54 (5)	1190-1200 = 10,3 1230-1260 = 4,0 1400 = 0,3-1,7						325 460-520 = 2,0	8,7-8,9	500	2,1-12,2

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1150	68,0 - 69,0 (66,0 - 71,0)	1190-1200*	500 800	57,5 - 59,5 (55,5 - 61,5) 64,5 - 66,5 (62,5 - 68,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

C1

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 8
2. Edition

En

PES 4 A 85 D 410/3 RS 2610 RSV 325-1150 A 8 B 2163 L
Komb.-Nr. 0 400 864 055

supersedes 10.82
company KHD
engine F 4 L 913
55 kW (75 PS)
/ 2300 min^{-1}
tractor DX 80

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC).

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	6,8-6,9	0,3(0,45)			
325	9,1-9,3	1,5-1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.19	325	8,7	1150	11,3+0,1
	x =	4,5					100	min.19,0	500	12,1+0,1
ca.55	10,3	1190-1200					325	9,1-9,3	900	11,6+0,2
(2a)	4,0	1245-1275					470 -	530 =2,0		
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	68,0-69,0 (66,0-71,0)	1190-1200*	500	58,0-61,0 (55,5-63,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
© 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

G2

c2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCL 9,8 a 1
2. Edition

En

PE 8 A 95 D 410 RS 2615 RSV 325-1025 A1B 2177 L
1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45° ± 0,5° (± 0,75°)
Komb.-Nr. 0 400 678 042

supersedes 9.82
company Schlüter
engine SDMT 110/112 W 8
136 kW (185 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,25) mm (from BDC) bei RW = 9,0 - 12,0

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1025	12,7+0,1	10,2-10,4	0,3(0,6)			
325	8,4-8,6	1,4-2,1	0,3(0,5)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	325	8,0	1025	12,7+0,1
	x =	5,0					100	min.19,5	500	13,1+0,1
ca.57	11,7	1065-1075					325	8,4-8,6	795	12,8+0,2
(2a)	4,0	1165-1195					590 -	650 = 2,0		
	1330	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1025	0,7 bar 102,5-104,5 (100,5-106,5)	1065-1075*	LDA 700	0,7 bar 103,5-106,5 (101,5-108,5)	100	171,5-181,5 / 19,5-21,0mm RW	-	-
			LDA 500	0 bar 73,5-76,5 (71,5-78,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE8A..RS 2615 with..A1B2177L	0,32	0,70 0 0,18	12,9-13,0 13,1-13,2 12,0-12,1 12,3-12,5

Notes:
(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0,4 - 0,5 bar
Unlocking at 0,15 - 0,25 bar.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 18,2 a
1. Edition

En

PE 10 A 95 D 520/5 LS 2623 RQV 250-1150 AB 1150 R
Komb.-Nr. 0 400 649 225

supersedes
company MAN
engine D 2840 MF
268 kW (364 PS)

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 - 27- 72- 99-144-171-216-243-288-315° ± 0,5°(± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 (1,65-1,85) mm (from BDC) Zyl. 10; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,0+0,1	12,5-12,7	0,3(0,6)			
250	7,9-8,1	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 12 (3a)	100	min. 8,5	200	0,6-0,8
							250	7,9-8,1	520	4,6-4,9
ca. 63	12,0	1190-1200					410-470	= 2,0	830	5,8-6,1
	4,5	1290-1320							1150	7,8
	1355	0 - 1,0								

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	124,5-126,5 (122,5-128,5)	1190-1200*	650	113,5-117,5 (111,5-119,5)	100	15,9-16,5 mm RW	1150	13,0+0,
			500	max. 118,5 (max. 120,5)			500	13,5+0,
							1010	13,4+0,2
							1080	13,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

C5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C5

D:AJUSTMENT TEST - ALTITUDE-PRESSURE COMPENSATOR

MAN 18,2 a

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 10 A..LS 2623 + RQV..AB 1150 R	0,68		10,8 - 11,6
		0,95-0,93	13,5 - 13,6
		0,91	13,0 - 13,3
		0,52	10,4 - 10,7

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C6

En CC

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 o
2. Edition
En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2625 RSV 325-1150 A8B 674 DL
Komb.-Nr. 0 400 876 305

supersedes 2.82
company KHD
engine B F 6 L 913 B Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	8,3 - 8,4	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 15	325	6,8	1150	11,4+0,1
	X =	3,0							500	12,2+0,1
							100	min.	1000	11,7+0,3
							325	7,2-7,4		
ca. 47	10,4	1190-1200					615-675	= 2,0		
(5)	4,0	1205-1235								
	1325	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 81,0 - 83,0 (79,0 - 85,0)	1190-1200*	LDA 800	0,7 bar 83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5) = 15,9 - 16,4 mm RW		
			LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

C7

BOSCH
Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 2625 with.. A8B 674 DL	0,7		12,2 - 12,3
		0	10,8 - 10,9
		0,36	11,9 - 12,0
		0,2	11,0 - 11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 2,9 b 1

1. Edition

En

PES 3 A 90 D 320 RS 2626 RSV 300-1000 A 1 B 2171-2 R

Komb.-Nr. 0 400 873 033

supersedes Eicher
company EDL 3-4
engine 49 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,2-2,3) (2,2-2,35), mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	8,2-8,3	0,2(0,45)			
300	9,0-9,2	2,5-3,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	300	8,6	1000	12,4-12,5
	x = 5,75						100	min.19,5	500	13,4-13,5
ca. 48 (2a)	11,4	1040-1050				395-455	300	9,0-9,2	870	12,8-13,0
	4,0	1085-1115								
	1275	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	82,0-83,0 (80,0-85,0)	1040-1050*	500	82,0-85,0 (80,0-87,0)	100	130,0-140,0 (127,0-143,0) =19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

C9

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 EIC 2,9 c 3
1. Edition
En

PES 3 A 90 D 320 RS 2626 RSV 300-1050 A 1 B 2171-3 R
Komb.-Nr. 0 400 873 034

supersedes
company Eicher
engine EDL 3-8
41 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,4+0,1	7,1 - 7,2	0,25(0,5)			
300	8,3-8,5	2,0 - 3,0	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	7,9	1050	10,4-10,5
	x	= 4,75					100	min.19,5	500	11,1-11,2
ca.57	9,4	1090-1100					300	8,3-8,5	885	10,7-10,9
(2a)	4,0	1130-1160					410-470	= 2,0		
	1295	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat (Note. changed to ..) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1050	71,0-72,0 (69,0-74,0)	1090-1100*	600	66,5-68,5 (64,0-71,0)	100	88,0-98,0 (85,0-101,0) = 14,7 - 15,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

C10

Test Specifications Fuel Injection Pumps and Governors

40

(1A)

WPP 001/4 EIC 2,9 c 2
1. Edition

En

FCJ 3 A 90 D 320 RS 2626 RSV 300-1050 A 1 B 2171-4 R

supersedes

company: Eicher

engine EDL 3-9
49 kW

Komb.-Nr. 0 400 873 035

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15-2,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,7+0,1	8,9 - 9,0	0,25(0,5)			
300	8,3-8,5	2,2 - 3,2	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0		-	-	-	ca. 26	300	7,9	1050	12,7-12,8
	x = 4,75						100	min.19,5	500	13,4-13,5
ca. 58 (2a)	11,7	1090-1100					300	8,3-8,5	775	13,0-13,2
	4,0	1145-1175					410 -	470 =2,0		
	1310	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note: changed to ..)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	88,5-89,5 (86,5-91,5)	1090-1100*	600	90,0-92,0 (87,5-94,5)	100	120,0-130,0 - (117,0-133,0) = 19,5-21,0 mmRW		-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

C11

C11

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 2,9 c 4

1. Edition

En

PES 3 A 90 D 320 RS 2626 RSV 300-975 A 1 B 2171-5 R

Komb.-Nr. 0 400 873 036

1 - 3 - 2 je 120°

supersedes -

company Eicher

engine EDL 3-2 40 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
975	11,3+0,1	7,7-7,8	0,25(0,5)			
300	7,9-8,1	1,5-2,5	0,2 (0,45			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 X = 5,25	-	-	-	ca. 23	300	7,5	-	-
ca. 53 (2a)	10,4 4,0 1235	1015-1025 1070-1100 0,3-1,7					100 300 415-475	min.19,5 7,9-8,1 =2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
975	77,0-78,0 (75,0-80,0)	1015-1025*	600	68,0-70,0 (66,5-72,5)	100	128,0-138,0 (125,0-141,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

C12

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

7.83

C12

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FOR 5,9 d
3. Edition
En

PES 6 A 90 D 210 RS 2628 RSV 325-1200 AOB 2140 L
Komb.-Nr. 0 400 866 104

supersedes 8.82
company Ford
engine Dover 363 T/C

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC) At port closing the locating pin must engage in the slot of the pointer.

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175	11,5+0,1	8,4-8,5	0,3(0,45)			
350	5,1-5,3	0,5-1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.38	350	4,7	-	-
	x =	4,0					100	min.19,0		
							350	5,1-5,3		
ca.67	10,5	1240-1250					490 -	550 =2,0		
(2a)	4,0	1375-1405					625	max. 1,0		
	1540	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1175	0,7 bar 83,5-84,5 (81,5-86,5)	1240-1250*	LDA 500	0 bar 49,0-51,0 (47,0-53,0)	100	76,0-90,0 / 19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

C13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1175 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 262L with .A0B 2140 L	0,7	0 0,48 0,30	11,5-11,6 10,1-10,2 11,1-11,2 10,2-10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FOR 5,9 l
2. Edition
En

Testoil-ISO 4113

PES 6 A 90 D 210 RS 2629 RSV 350-1300 AOB 2142 L
Komb.-Nr. 0 400 866 102

supersedes 8.82
company: Ford
engine: Dover 363

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

At port closing the locating pin must engage in the slot of the pointer.

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,7+0,1	5,9 - 6,0	0,3(0,45)			
350	7,3-7,5	0,7 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca.39	350	6,9	1250	11,7+0,1
	X =	3,5					100	min.19,5	700	11,9+0,1
ca. 71	10,7	1370-1380					350	7,3-7,5		
(5)	4,0	1515-1545					580-640	= 2,0		
	1680	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery charactenstics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1250	58,5-59,5 (56,5-61,5)	1370-1380 *	1000	51,0 - 55,0 (49,0 - 57,0)	100	76,0-90,0 bei 19, - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

C15

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 e
2. Edition
En

PES 6 A 80 D 410 RS 2633 RQV 300-1350 AB 1175 L

Komb.-Nr. 0 400 846 499

supersedes 6.83
compare Fiat
engine 8060.24.661
90,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

1 680 150 413

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15-2,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1350	13,5+0,1	6,7 - 6,8	0,25(0,35			
300	7,1-7,3	0,9 - 1,5	0,2 (0,3)			
800	-	C, Sp. 4u.5	0,35(0,45			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca. 13	100	min.9,0	250	0,2-0,5
							300	7,4-7,6	550	3,0-3,5
ca. 60	12,5	1390-1400					920	max.1,0	1000	5,2-5,4
	4,0	1540-1570				350-450			1550	9,6
	1700	0 - 1,0				③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1350	0,7 bar 66,5-67,5 (65,0-69,0)	1390-1400*	LDA 800	0,7 bar 59,0-61,0 (57,0-63,0)	200	70,0-80,0 (67,0-83,0) = 15,0-15,5 mm RW	-	-
			LDA 500	0 bar 39,5-41,5 (37,5-43,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

983

C16

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

D. Adjustment Test for Manifold Pressure Compensator

FIA 5,5 e

Test at n = 1350 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
PES 6 A..RS 2633 +RQV..AB 1175 L	0,70	0,27 0,23 0	13,5 - 13,6 13,2 - 13,3 12,4 - 12,6 12,0 - 12,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 EIC 3,9 c
3. Edition
En

PES 4 A 90 D 320 RS 2634 RSV 300-1025 A 1 B 2153 R

supersede 6.83
company Eicher
engine EDL 4-2
65 kW (88 PS)

1 - 2 - 4 - 3 je 90° ± 0,5° (± 0,75°)

Komb.-Nr. 0 400 874 233

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15-2,35) mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1025	12,6+0,1	8,1 - 8,2	0,2(0,45)			
300	10,9+0,2	4,4 - 4,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 16	300	10,5	1025	12,6+0,1
	x =	2,25							500	13,2+0,1
							300	10,9-11,1	880	12,9+0,2
(5) 40	11,6	1065-1075					400-460	=2,0		
	4,0	1095-1125								
	12 60	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1025	81,0-82,0 (79,0-84,0)	1065-1075*	750	83,5-86,5 (81,5-88,5)	100	101,0-111,0 (98,0-114,0) = 17,7-18,3 mm RW	-	-
			500	77,0-79,0 (75,0-81,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

C18

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 3,9 f
2. Edition
En

PES 4 A 80 D 320 RS 2651 RSV 300-1075 A1B 2175 R
Komb.-Nr. 0 400 874 235
1 - 2 - 4 - 3 je 90° ±0,5° (±0,75°)

supersedes 11.82
company Eicher
engine EDL 4-1

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1 -2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	10,5+0,1	6,2-6,3	0,2 (0,35)			
300	9,4-9,6	3,0-4,0	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	300	9,0	1075	10,5+0,1
	X =	5,5					100	min 19,5	500	11,3+0,1
ca. 61	9,5	1115-1125					300	9,4-9,6	850	10,9+0,2
(5)	4,0	1165-1195					450-510	=2,0		
	1330	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1075	62,0-63,0 (60,5-64,5)	1115-1125*	600	64,5-66,5 (63,0-68,0)	100	17,4-18,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 EIC 3,9 g
2.Edition
En

PES 6 A 80 D 320 RS 2652 RSV 300-1050 A 0 B 2001-1 R

Komb.-Nr. 0 400 876 314

supersedes 3.83
company Eicher
engine EDL6-1

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,4+0,1	6,5-6,6	0,2(0,35)			
300	6,9-7,1	1,1-1,7	0,2(0,3)			
600	-	C, Sp. 4 u. 5	0,3			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	300	6,5	1050	10,4-10,5
	X = 6,0						100	min.19,0	500	11,4-11,5
ca. 51	9,4	1090-1100					300	6,9-7,1	830	10,9-11,1
(2a)	4,0	1160-1190					445-505	= 2,0		
	1325	0,3-1,7					650	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1050	64,5-65,5 (63,0-67,0)	1090-1100	600	68,5-70,5 (67,0-72,0)	100	100,0-110,0 = 16,2-16,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.83

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrustung

C20

C20

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 EIC 3,9 g 1
1. Edition
En

PES 6 A 80 D 320 RS 2652 RSV 300-1150 A 0 B 2001-2 R

Komb.-Nr. 0 400 876 317

supersedes
company Eicher
engine EDL 6-2

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1-2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	7,8 - 7,9	0,25(0,4)			
300	8,3-8,5	2,0 - 3,0	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 2,75	-	-	-	ca. 17	300	7,9	-	-
							100	min. 19,5		
							300	8,3 - 8,5		
ca. 42 (2a)	11,0	1190-1200					570-630	= 2,0		
	4,0	1285-1315								
	1430	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	77,5-78,5 (76,0-80,0)	1190-1200*	600	71,0-73,0 (69,0-75,0)	100	103,0-113,0 = 16,2-16,8 mmRW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

C21

C21

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MWM 6,2 e 1
1. Edition
En

PES 6 A 90 D 320/3 RS 2660 RSV 325-1200 A 0 B 2181 R

Komb.-Nr. 0 400 866 114

supersedes-
company MWM
engine TD 226 B-6

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,8-3,1) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,0-9,1	7,5 - 7,6	0,3(0,45)			
325	7,4-7,6	2,6 - 3,4	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	325	7,0	1200	9,0 - 9,1
	x = 5,0								500	9,9 -10,0
							325	7,4-7,6	860	9,5 - 9,7
ca. 51	8,0	1240-1250					545-605	= 2,0		
(2a)	4,0	1300-1330								
	1465	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to .) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1240-1250*	LDA	0 bar	100	113,0-123,0 -	-	
1200	74,5-75,5		500	59,5-60,5		= 19,5 -		
	(72,5-77,5)			(57,5-62,5)		21,0 mmRW		

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C22

C22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A..RS 2660 + RSV..AOB 2181 R	0,70	0 0,14 0,13	9,9 -10,0 9,0 - 9,1 9,8 - 9,9 9,5 - 9,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 6,0 f
2. Edition

En

PES 6 MW 100/320 RS 1004 RSV 325-1050 MW 4/308
0 403 476 012

supersedes 4.82
company Volvo/Penta
engine TD 60 D
112 kW (152 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1020	10,6+0,1	8,45-8,65	0,35(0,6)			
325	4,9-5,0	1,0 -1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm + 0,1 11
loose	800 0,3-1,0			ca. 26	325	4,3	350	11,2
	x = 4,0				325	4,9-5,0	500	10,8
ca.63	1090-1100 = 9,6						1050	10,6
(2a)	1130-1160 = 4,0				450-510	= 2,0		
	1300 = 0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1020	84,5-86,5 (82,5-88,5)	1090-1100*			100	min.140,0	325	4,9
					325	10,0-14,0 (7,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

9.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DEE 7,6 b

2. Edition

En

PES 6 A 100 D 410 RS 3034 RSV 600-1100 A 2 B 2080 L

Komb.-Nr. 0 401 276 049

supersedes 4.83
company John Deere
engine 6.466 AZ-01
152 kW

Use oberflow valve 1 413 385 007

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,9±0,1	13,0-13,2	0,3			
600	4,8-5,0	1,3-1,7	0,3			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	600	4,4	-	-
							100	min. 19,0		
							600	4,8-5,0		
							620-680	= 2,0		
							800	max. 1,0		
ca. 37 (2a)	11,2	1145-1155								
	4,0	1195-1225								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 130,0-132,0 (128,5-133,5)	1145-1155*	LDA 500	0 bar 68,5-71,5 (67,0-73,0)	100	170,0-195,0 = 19,0-21,0 mm RW	600	4,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

D1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A ..RS 3034 +RSV..A 2 B 2080L	0,29	0,13	2,65-2,75 0,7-1,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D2

En D2

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 VOL 6,0r2

1 Edition

En

PES 6 MW 100/320 RS 1104
RSV 650-750 MW 4/311-2

0 403 476 018

supersedes
company Volvo
engine TD 60 DG 86 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,1+0,1	9,05-9,25	0,35(0,6)			
650	4,5-4,6	1,7 - 2,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 34	650	4,0	375	11,9-12,5
	x =	3,0					650	4,5-4,6	470	11,1-11,2
ca.40	10,1 =	750-760					690-750	= 2,0		
(2a)	4,0 =	760-790								
	0,3-1,7 =	930								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note. changed to .) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
700	90,5-92,5 (88,5-94,5)				650	17-21 (15,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

9.83

D3

DJ

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MB 8,7 j
6. Edition
En

PE 6 MW 100/720 RS 1007
RQ 300/1250 MW 12-1 (MW 12)
Komb.-Nr. 0 403 546 001
1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300
+ 0,50 (0,75)°

supersedes 11.82
company: Daimler Benz
engine: OM 360 A
155 kW (211 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,80-3,90 (3,75-3,95) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,2+0,1	9,95-10,15	0,35(0,6			
300	6,9-7,1	1,35-1,75	0,35(0,55)			
750	11,2+0,2	C, Sp. 4-5	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	13,1-13,9	650	13,5	10,2	1295-1310	300	7,0	220	min.9,0		
1550	0,1-1,0	VH =	46°	4,0	1395-1425			300	6,9-7,1		
								395-435	= 2,0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/–1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/–1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1250	99,5-101,5 (97,5-103,5)	500	750	93,0-97,0 (91,0-99,0)	100	125,0-135,0 (122,0-138,0)
					300	13,5-17,5 (11,0-20,0)

Checking values in brackets

8.83

D4

D4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 d
7. Edition
En

PE 8 MW 100/720 LS 1010
RQV 300-1150 MW 23
Komb. 0 403 548 002

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3
0 - 45- 90-135-180-225-270-315 ± 0,5 (0,75)°

superseded 1.82
company: KHD
engine: BF 8 L 413 F
212 kW (288 PS)
/ 2100 min
bzw. 206 kW
/ 2300 min^{-1}
(Maxidyne)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,	13,6-13,8	0,35(0,6)			
300	6,3-6,5	1,25-1,65	0,35(0,55)			
500	10,2+0,					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1180 1400	15,2-17,8 0 - 1,0				ca. 18,5 (3a)	100 300	min. 7,8 6,3-6,5	300 500	1,4 3,2-3,8
ca. 63	9,2 4,0	1160-1170 1235-1265					430-490	=2,0	1200	8,5-8,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 700	0,8 bar 136,0-138,0 (134,0-140,0)	1160-1170*	LDA 500	0 bar 94,0-96,0 (92,0-98,0)	100	136,5-146,5 (133,5-149,5)	700 780 1050 1150	12,5+0,1 12,5+0,1 11,2+0,2 10,2+0,3
					100-230 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

D5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

D5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
LS 1010 + MW 23	0,8		12,5 - 12,6
		0,24	10,5 - 10,6
		0,38	11,8 - 11,9
		0	10,2 - 10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 OMB 8.1 c 1

2. Edition

En

PES 6 MW 100/720 RS 1012 RQV 425-1100 MW 35

supersedes 11.82

company OM-Brescia

engine: 8365.25.522
112 kW (152 PS)

0 403 446 126
1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300 ±0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	8,15-8,35	0,35(0,6)			
425	5,8-6,0	1,05-1,45	0,35(0,55)			
700	11,1+0,1		0,5 (0,7)			
500	10,6+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.14	425	5,8-6,0	425	1,8
	1300	0 - 1,0					100	min. 7,5	500	2,3-3,0
									1150	9,0-9,2
ca.48	9,2	1140-1150						470-530=2,0		
	4,0	1185-1215				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9 +0,1
LDA	0,5 bar		LDA	0,5 bar	100	RW max.19 min.160 (min.157)	700	11,1
1100	81,5-83,5 (79,5-85,5)	1140-1150*	700	84,5-88,5 (82,5-90,5)	425	10,5-14,5 (9,0-18,0)	1000	10,2
			LDA 500	0 bar 67,5-69,5 (65,5-71,5)		100-345 (80-365)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

D7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

OMB 8,1 c 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1012 +	0,25		10.9 - 11,0
RQV..MW 35		0,5	11,1 - 11,2
		0	10,6 - 10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D8

En 28

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1d
3. Edition
En

PES 6 MW 100/720 RS 1012 RQV 425-1100 MW 36
0 403 446 127

superseded: 8.83
company: OM-Brescia
engine: 8365.25.580
129 kW (175 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60-120-180-240-300 ±0,5 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5+0,1	9,6 - 9,8	0,35(0,6			
425	5,8-6,0	1,15 - 1,55	0,35(0,55			
700	12,4+0,1		0,5 (0,7			
500	11,2+0,1		0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3 (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6 (4)	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9 (3)	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.14	425	5,8-6,0	425	1,8
	1300	0 - 1,0					100	min.7,5	500	2,3-3,0
ca.49	10,5	1140-1150					470-530=	2,0	1150	9,0-9,2
	4,0	1185-1215				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,5 bar		LDA	0,5 bar			700	12,4+0,1
1100	96,0-98,0 (94,0-100,0)	1140-1150*	700	101,0-105,0 (99,0-107,0)	100	RW max.19 min.160,0	1000	11,5+0,1
			LDA	0 bar	425	11,5-15,5 (9,0-18,0)		
			500	75,0-77,0 (73,0-79,0)	100-345(80-365)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

D9

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1012 with RQV-MW 36	0,27		12,1 - 12,2
		0,2	11,5 - 11,7
		0,5	12,4 - 12,5
		0	11,2 - 11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1) VPP 001/4 OMB 8,1 c

2. Edition En

supersedes 4.82
company: OM Brescia
engine: 8365.25.530
121,4 kW (165 PS)

PES 6 MW 100/720 RS 1012 RQV 425-1000 MW 36-1
0 403 446 133

1 - 5 - 3 - 6 - 2 - 4
0 - 60 - 120 - 180 - 240 - 300 ± 0,5 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,7+0,1	9,1-9,3	0,35(0,6)			
425	6,4-6,5	1,55-1,75	0,35(0,55)			
700	12,6+0,1		0,5(0,7)			
500	11,5+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100 1200	15,2-17,8 0 - 1,0	-	-	-	ca. 26	425 100	6,4-6,5 min. 8,0	425 500 1050	1,8 2,3-3,0 3,6-8,7
ca. 51	10,7 4,0	1040-1050 1120-1150				(3a)	490-550	= 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9 +0,1
LDA 1000	0,6 bar 91,0-93,0 (89,0-95,0)	1040-1050 *	LDA 700	0,6 bar 102,0-104,0 (99,0-106,0)	100	RW 19-21 160,0-180,0 (157,0-183,0)	500 700 800	12,6 12,6 12,4
			LDA 500	0 bar 71,5-73,5 (69,5-75,5)	425 100-345	13,5-17,5 (11,0-20,0) (80-365)	950 1000	11,7 11,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

D11

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min ~~decreasing~~ ~~increasing~~ ~~XXXXXX~~ ~~XXXXXXX~~ pressure - in bar gauge pressure XXXXX

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1012 + RQV-MW 36-1	0,36	0,6 0 0,31	12,2-12,3 12,6-12,7 11,5-11,6 11,8-11,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 8,8c

2. Edition

En

PES 8 MW 100/320 RS 1022 RQV 250 - 1300 MW 37
0 403 448 110

supersedes -

company: Perkins

engine. TV 8.540
242 kW (329 PS)

1 - 8 - 7 - 5 - 4 - 3 - 6 - 2
0 -45 -90 -135-180-225-270-315

Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-No. 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,6+0,1	11,3-11,5	0,35(0,6)			
250	5,9-6,0	1,55-1,95	0,35(0,55			
800	11,6+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300 1500	15,2-17,8 0-1,0	-	-	-	ca.11	250 100	5,9-6,0 min.7,5		
ca.64	10,6 4,0	1340-1350 1395-1425				270-490 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1300	113,0-115,0 (111,0-117,0)	1340-1350*	800	111,5-115,5 (109,5-117,5)	100	min. 140,0		
					250	15,5-19,5 (13,0-22,0)		
					100-180 (80-200)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

D13

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

D13

Port closing and TDC markerings

Comb.- No.	°camshaft between port closing and TDC
	at control-rod travel 10,5 mm
... 110	17°

D14

D14

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 8,7 o
1. Edition
En

PES 6 MW 100/720 RS 1101
RQV 300-1300 MW 44-1
0 403 446 143

supersedes
company: Daimler Benz
engine: OM 362 LA
141 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 -3,3 (3,15-3,35) mm (from BDC) 9 - 12 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,9+0,1	9,45-9,65	0,35(0,6)			
300	6,0-6,1	1,05-1,45	0,35(0,55)			
800	11,9+0,1		0,5 (0,7)			
500	10,2+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1330 1600	15,2-17,8 0,1-1,0				ca. 11	100 300 520-580	min.7,6 6,0-6,1 = 2,0		
ca.64	10,9 4,0	1340-1350 1435-1465				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 94,5-9,65 (92,5-98,5)	1340-1350*	LDA 800 LDA 500	0,7 bar 89,5-93,5 (87,5-95,5) 0 bar 54,5-56,5 (52,5-58,5)	100 300 100-230	80,0-90,0 (77,0-93,0) 10,5-14,5 (8,0-17,0) (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

D15

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

D15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

MB 8,7 o

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1101 + MW 44-1	0,7 bar	0 0,1 0,15	11,9 - 12,0 10,2 - 10,3 10,4 - 10,5 10,9 - 11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 VOL 4,5 b

2. Edition

En

PES 4 MW 100/320 RS 1102 RQV 300-1100 MW 39

0 403 444 101

supersedes 11.82
compan Volvo-BM
engine TD 45
85 kW (116 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,6+0,1	10,0-10,2	0,35(0,6)			
300	5,6-5,7	0,95-1,35	0,35(0,55)			
1000	11,6+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	rev/min 10	mm 11
max.	1100 1350	15,2-17,8 0 - 1,0				ca. 11	300 100	5,6-5,7 min. 7,2		
ca. 46	10,6 4,0	1140-1150 1190-1220				(3a)		380-440 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	100-102 (98,0-104,0)	1140-1150*	1000	101,0-105,0 (99,0-107,0)	100 300 100-220 (0-250)	min. 140,0 9,5-13,5 (7,0-16,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

D17

D17

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 a 1

2. Edition

En

PES 6 MW 100/320 RS 1103
RQV 350-1300 MW 43
0 403 446 131

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

supersedes 12.82
company IHC
engine DT 466 B
154,5 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,9+0,1	10,3-10,5	0,35(0,6)			
350	6,0-6,2	1,6-2,0	0,35(0,55)			
1300	11,9+0,1		0,65(0,7)			
500	9,6+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0 0-1	1440 1600	-	-	-	ca.14	100 350	min.9,0 6,0-6,2	350 450 1350	1,6 2,5-2,8 7,5
ca.62,5	4,0	1475-1485				370-650 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 103,0-105,0 (101,0-107,0)		LDA 1300	0,9 bar 107,0-111,0 (105,0-113,0	100	19-21 mm RW 140-180		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	16,0-20,0 (13,5-22,5)		
					220-280	(210-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

D18

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by / Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50. Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D18

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1103 + RSV .. MW 43	0,51		11,3 - 11,4
		0,9	11,9 - 12,0
		0	9,6 - 9,7
		0,28	10,4 - 10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry pump adjustment only with overflow valve 1 417 413 040 and Ir se with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 c
3. Edition
En

PES 6 MW 100/320 RS 1103
RQV 350-1300 MW 43-1
0 403 446 132

superseded 9.83
company IHC-USA
engine DT 466 B
143,4 kW (195 PS)

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-Oil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,9+0,1	9,55-9,75	0,35(0,6)			
350	5,7-5,8	1,6 - 2,0	0,35(0,55			
1300	10,9+0,1					
500	9,4-9,5		0,65(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	8,0	1355	-	-	-	ca. 13	100	min.9,0		
	0-1	1550					350	5,8-6,0		
ca.61,5	4,0	1470-1480				360-700 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)		LDA 1300	0,9 bar 96,5-100,5 (94,5-102,5)	100	19-21 mm RW		
					350	140-180 16,0-20,0 (13,5-22,5)		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	220-280	(210-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

D20

BOSCH
Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1103 ÷ RQV..MW 43-1	0,4	0,9 0 0,2	10,5 - 10,6 10,9 - 11,0 9,4 - 9,5 9,8 - 9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 PER 10,0 r

1. Edition

En

PES 8 MW 100/720 RS 1106
RQV 275-1125 MW 40
0 403 448 118

supersedes-
company: Perkins
engine: V8.640 GR
147 kW

Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,7+0,1	9,05-9,25	0,35(0,6)			
275	6,2-6,4	1,35-1,75	0,35(0,55			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1190 1350	15,2-17,8 0 - 1,0				ca.11	100 275	min.7,7 6,2-6,4		
ca.62	9,7 4,0	1175-1185 1220-1250				300-500 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4c): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
800	90,5-92,5 (88,5-94,5)	1175-1185*			100	min. 140		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

D22

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

D22

Port closing and TDC markerings

Comb.- No.	°camshaft between port closing and TDC
... 110	at control-rod travel 9,0 -12,0 mm
	15°

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP G01/4 KHD 30,4 c
1. Edition

En

PE12 P120 A920/5 RS 294 RSU 300/1000 POA 331 R

supersedes -

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)

company KHD
engine BA 12 M 816
Kombin.-Nr. 0 401 870 058

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) =RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	31,0-31,4	0,5(0,9)			
300	6,3-6,5	2,2-2,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800 X=	0,3-1,0	-	-	-		300	6,4	1000	14,9-15,0
							300 360-400	6,3-6,5 = 2,0	360 550	16,2-16,8 14,9-15,0
(2a)	13,9 4,0 1250	1040-1050 1130-1160 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to ...) rev/min 3	(3a) Fuel delivery charactenstics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
Not known. Carry out adjustment on engine.		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

D24

D24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 b 1

2. Edition

En

supersedes 12.82

company IHC - USA

engine DTC 466 B
121,3 kW (165 PS)

PES 6 MW 100/320 RS 1107
RQV 350-1200 MW 43

0 403 446 135

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,1+0,1	8,4 - 8,6	0,35(0,6)			
350	5,9-6,1	1,6 - 2,0	0,35(0,55)			
1200	11,1+0,1		0,65(0,7)			
500	9,8+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0 0-1	1355 1450	-	-	-	ca. 14	100 350	min.9,0 5,9-6,1	550 450 1350	1,6 2,5-2,8 7,5
ca.60,5	4,0	1365-1375				370-650 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 84,0-86,0 (82,0-88,0)		LDA 1200 LDA 500	0,9 bar 86,5-90,5 (84,5-92,5) 0 bar 61,5-63,5 (59,5-65,5)	100 350 220-280	19-21 mm RW 140-180 16,0-20,0 (13,5-22,5) (210-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

E1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

E1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1107 + RQV .. MW 43	0,3		10,8 - 10,9
		0,9	11,1 - 11,2
		0	9,8 - 9,9
		0,13	10,1 - 10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

Test Specifications Fuel Injection Pumps ① and Governors

En

WPP 001/4 IHC 7,6d

2. Edition

supersedes 12.82
company: IHC-USA
engine DT 466 B
132,4 kW (180 PS)

PES 6 MW 100/320 RS 1107
RQV 350-1200 MW 43-2
0 403 446 136

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,8+0,1	9,45-9,65	0,35(0,6)			
350	5,9-6,1	1,6-2,0	0,35(0,55)			
1200	11,8-11,9		0,65(0,7)			
500	10,4-10,5					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	8,0 0,1	1355- 1500	-	-	-	ca. 15	100	min.9,0		
							350	5,9-6,1		
ca.61,5	4,0	1375-1385				370-650				
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed (2b) limitation intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 94,5-96,5 (92,5-98,5)		LDA 1200	0,9 bar 96,0-100,0 (94,0-102,0)	100	19-21 mm RW 140,0-180,0		
			LDA 500	0 bar 70,0-72,0 (68,0-74,0)	350	16,0-20,0 (13,5-22,5)		
					220-280	(210-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

E3

BOSCH

E3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1107 + RQV..MW 43-2	0,39		11,5 - 11,6
		0	10,4 - 10,5
		0,9	11,8 - 11,9
		0,17	10,7 - 10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

E4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 e
2. Edition
En

PES 6 MW 100/320 RS 1108
RQV 350-1200 MW 43-3
0 403 446 137

superseded 12.82
company IHC-USA
engine DT 466 B
132,4 kW (180 PS)

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

Tested ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,5+0,1	9,05-9,25	0,35(0,6)			
350	6,2-6,3	1,6 -2,0	0,35(0,55)			
1200	11,5+0,1		0,65(0,7)			
500	10,0+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	rev/min 10	mm 11
max.	8,0 0,1	1360 1450	-	-	-	ca. 17	100 350	min.9,0 6,2-6,3		
ca.60,5	4,0	1380-1390				370-650 ③a				

Torque control travel a ~ mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery ⑥ idle switching point		Torque-control ⑤ travel	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 90,5-92,5 (88,5-94,5)		LDA 1200	0,9 bar 93,0-97,0 (91,0-99,0)	100	19,0-21,0 RW 140-180 (137-183)		
			LDA 500	0 bar 60,0-62,0 (58,0-64,0)	350	16,0-20,0 (13,5-22,5)		
					220-280 (210-290)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

E5

E5 BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

IHC 7,6 e

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1108 + RQV.. MW 43-3	0,42	0,9 0 0,19	11,1 - 11,2 11,5 - 11,6 10,0 - 10,1 10,3 - 10,4

Notes

(1) when n = rev/min and gauge pressure = bar (maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

En EC

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 IHC 7,6 f

3. Edition

En

PES 6 MW 100/320 RS 1108
RQV 350-1300 MW 43-4
0 403 446 138

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

supersedes 12.82
company: IHC
engine: DT 466 B
154,5 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
900	12,6+0,1	10,7-10,9	0,35(0,6			
350	6,5-6,6	1,6-2,0	0,35(0,55)			
1300	12,6+0,1		0,65(0,7)			
500	9,6+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0 0-1	1440 1580	-	-	-	ca.16	100 350	min.9,0 6,1-6,2		
ca.61,5	4,0	1500-1510				370-650 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 107,0-109,0 (105,0-111,0)		LDA 1300	0,9 bar 112,5-116,5 (110,5-118,5)	100	19-21 mm RW 140,0-180,0		
			LDA 500	0 bar 53,5-55,5 (51,5-57,5)	350	16,0-20,0 (13,5-22,5)		
					220-280 (210-290)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

E7

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1108 + RQV .. MW 43-4	0,57	 0,9 0 0,27	11,9 - 12,0 12,6 - 12,7 9,6 - 9,7 10,4 - 10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

E8

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 g

En 3. Edition

PES 6 MW 100/320 RS 1108
RQV 350-1200 MW 43-5
0 403 446 139

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

supersedes 3.83
company IHC
engine DT 466 B
121,4 kW (165 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,5+0,1	8,3-8,5	0,35(0,6)			
350	5,8-5,9	1,6-2,0	0,35(0,55)			
1200	10,5+0,1		0,65(0,7)			
500	9,2-9,3					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0 0-1	1360 1460	-	-	-	ca. 14	100 350	min. 9,0 5,8-5,9		
ca.58,5	4,0	1360-1370				360-640 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 83,0-85,0 (81,0-87,0)		LDA 1200	0,9 bar 88,5-92,5 (86,5-94,5)	100	19-21 mm RW 140-180		
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	350 220-280	16,0-20,0 (13,5-22,5) (210-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2.

9.83

E9

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

E9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

IHC 7,6 g

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution / difference mm (1)
RS 1108 + RQV .. MW 43-5	0,9		10,5 - 10,6
		0	9,2 - 9,3
		0,2	9,7 - 9,8
		0,34	10,2 - 10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6L
2. Edition
En

PES 6 MW 100/320 RS 1108
RQV 350-1300 MW 45

supersedes: 83
company IHC
engine DT 466 B
143,5 kW

0 403 446 140

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,7+0,1	9,55-9,75	0,35(0,6			
350	5,9-6,0	1,6-2,0	0,35(0,55)			
1300	11,7+0,1		0,65(0,7			
500	9,0-9,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3 (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6 (4)	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9 (3)	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0 0,1	1440-1505 1550	-	-	-	ca.14	100 350	min. 9,0 5,9-6,0		
ca.61,5	10,8 4,0	1360-1380 1475-1485				380-700 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation, intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)	1360-1380*	LDA 1300 LDA	0,9 bar 99,5-103,5 (97,5-105,5) 0 bar 52,5-54,5 (50,5-56,5)	100 350 220-280(210-290)	RW 19-21 140-180 (137-183) 16,0-20,0 (13,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

E11

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D 7 Stuttgart 1. Postfach 50 Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1108 + MW 45	0,9	0 0,2 0,57	11,7 - 11,8 9,0 - 9,1 9,5 - 9,6 11,2 - 11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

E12

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 n
1. Edition
En

PES 6 MW 100/320 RS 1112
RQV 350-1300 MW 46
0 403 446 141

Nozzle-and-holder assembly
1 688 901 016 (207 + 3 bar)

supersedes
company IHC
engine DTI-466 C
154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	0,5+0,1	10,3-10,5	0,35(0,6)			
350	5,2-5,3	1,6-2,0	0,35(0,55)			
1300	10,5+0,1		0,65(0,6)			
500	8,4+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	8,0	1440-1505				ca. 14	100	min.9,0		
	0-1	1600					350	5,2-5,3		
ca.48,5	4,0	1490-1500				370-650 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 103,0-105,0 (101,0-107,0		LDA 1300	0,9 bar 107,0-111,0 (105,0-113,0)	100	RW 19-21 140-180 (137-183)		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	16,0-20,0 (13,5-22,5)		
					220-280(210-290)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

E13

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

E13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1112 + MW 46	0,9 bar	0 0,28 0,51	10,5-10,6 8,4-8,5 9,0-9,1 10,0-10,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

E14

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 PEN 10,0 d 1
2. Edition

En

PE 6 P 110 A 320 RS 138 RSV 200-900 P 1/305 R
Komb.-Nr. 0 401 876 104

supersedes 3.83
company Volvo-Penta
engine MD 100 B
114 kW (155 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 - 2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,3-9,4	10,9-11,1	0,4 (0,8)			
225	5,4-5,5	1,0-1,4	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	225	5,0	-	-
	x = 6,0									
ca.55 (2a)	8,3	940-950					225	5,4-5,5		
	4,0	980-1010					310-370	= 2,0		
	1150	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to .) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	109,0-111,0 (106,0-114,0)	940-950*	-	-	100	310,0-330,0 = RW 20,0-21,0 mm	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.83

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

E15

E15

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 VOL 12,0 a

5. Edition

Testoil-ISO 4113

PE 6 P 110 / A 320 RS 141 RQV 200-1100 PA 103/2R En

RS141,Z,Y 250-1100 PA 234/2R

supersedes 4.81

company Volvo

engine TD 120

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	17,9 - 18,7	0,6			2,5 ± 0,1 ** (max.2,2-2,9)
600	6	3,2 - 4,2				
	12	17,3 - 18,8				
	15	23,5 - 25,3				
200	6	1,1 - 2,1				

Adjust the fuel delivery from each outlet according to the values in [ ]

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

RQV .. 103/2R mit 141

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	Sliding sleeve travel Torque-control travel: rev/min 10	mm 11
ca. 68	1150	15,5-18,3				ca.23	100	7,0-10,0	200	1,5-2,3
	1410	0					200	5,0-8,4	500	3,6-4,0
ca. 66	1100	15,0-18,0					300	2,4-5,2	1150	8,3
	1200	7,2-12,6					400	0 -2,2		
	1260	2,0-9,0					460	0	-	-
	1400	0								

Torque control travel a = mm

abnorm. sldg-sleeve pos'n = 36,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation: rev/min 3	Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point: rev/min 6	cm³/1000 strokes 7	Intermediate rotational speed Torque-control travel: rev/min 8	mm
LDA	0,7 bar		LDA	0 bar				
700	181,0-183,0	1150	700	124,0-127,0	100	390 - 410		
					200	17 - 21 **		
						Streug.max.2,5)		
	(increase by ± 1,0	cm³)						./.

Checking values in brackets

* 1 mm less control rod travel than col 2

7.83

E16

RQV..234/2R mit 141

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min (1)	mm
1	2	3		4	5	6		7	8	9		10	11
ca.50	1170	15,0-18,3						ca. 13	100	9,0-11,0		350	1,4-2,0
	1400	0							200	7,2-9,9		650	3,7-4,0
ca.45	1100	15,0-17,8							300	4,0-6,9		1170	8,3
	1200	6,4-12,0							400	0 -2,8			
	1280	0 -6,2							490	0		-	-
	1360	0						(3a)					

Torque control travel a = —— mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min (4a)	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0 bar				
700	181,0-183,0	1160-1170 *	700	124,0-127,0	100	390 - 410		
					250	11 - 15	**	
					Streug.max.2,5) —			

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV .. 234/2R mit 141Z

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min (1)	mm
1	2	3		4	5	6		7	8	9		10	11
ca. 50	1170	15,0-18,3						ca.13	100	9,0-11,0		350	1,4-2,0
	1400	0							200	7,2-9,9		650	3,7-4,0
ca. 45	1100	15,0-17,8							300	4,0-6,9		1170	8,3
	1200	6,4-12,0							400	0 -2,8			
	1280	0 -6,2							490	0		-	-
	1360	0						(3a)					

Torque control travel a = —— mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min (4a)	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,9 bar		LDA	0 bar				
700	205,0-207,0	1160-1170*	700	124,0-127,0	100	390 - 410		
					250	11 - 15	**	
					Streug.max.2,5) —			

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV .. 234/2R mit 141Y

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.50	1170	15,0-18,3						ca.13	100	9,0-11,0		350	1,4-2,0
	1400	0							200	7,2-9,9		650	3,7-4,0
ca.45	1100	15,0-17,8							300	4,0-6,9		1170	8,3
	1200	6,4-12,0							400	0 -2,8			
	1280	0 -6,2							490	0		-	-
	1360	0						(3a)					

(1)

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0 bar				
700	161,0-163,0	1160-1170	700	116,0-119,0	100	390 - 410		
					250	11 - 15		
					Streug.	max.2,5)--		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm
141 mit 103/2R	0,48-0,50	0,12-0,22	- - -
141 mit 234/2R	0,60-0,62	0,14-0,30	- - -
141Z mit 234/2R	0,62-0,66	0,14-0,27	- - -
141Y mit 234/2R	0,49-0,52	0,14-0,30	- - -

En

E18

E18

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FIA 13,8 a
9. Edition

En

PE 6 P 120 A 720 RS 167 RQ 225/1100 PA 118 R
Komb.-Nr. 0 401 846 225

supersedes 3.83
company Fiat
engine 221 A

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	17,0-17,3	0,5(0,9)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PPG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,1 4,0 1350	1145-1160 1190-1220 0-1,0	225	7,6	100 225 365-405	min. 9,1 7,5-7,7 = 2,0	1100 600	11,1-11,2 11,1-11,3

Torque-control travel on flyweight assembly dimension a = C mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm 7
1100	170,0-173,0 (167,0-176,0)	-	-	-	100	19,0-21,0

Checking values in brackets

7.83

E19

E19

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 FIA 13,8 a 4
3. Edition

En

PE 6 P 120 A 720 RS 167 Z RQ 225/1100 PA 118 R
Komb.-Nr. 0 401 846 345

supersedes 3.83
company: Fiat
engine: 221 A
210 kW (286 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	16,3-16,6	0,5(0,9)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,3 4,0 1300	1145-1160 1185-1215 0-1,0	225	7,6	100 225 365-405	min. 9,1 7,5-7,7 = 2,0	1100 550	10,3-10,4 10,3-10,5

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm 7
1100	163,0-166,0 (160,0-169,0)	-	-	-	100	19,0-21,0

Checking values in brackets

7.83

E20

E20

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 9,4a

1. Edition

En

PES 8 P 100 A 921/5 RS 286 RQV 325-1250 PA 445 KR

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5

Values only apply to test nozzle and holder assembly 1 688 901 017 and fuel-injection test tubing 9 681 230 713.

Suction-gallery pressure 2,8 bar

supersedes

company: IHC

engine: DVT 573 B Komb.-Nr.0 402 058 045

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	10,9-11,1	0,4			
325	5,0-5,1	1,7-2,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
ca. 63	8,6 4,0 1640	1290-1300 1505-1535 0-1,0	-	-	-	ca.10 3a	100 325 350-410	7,1-8,0 4,9-5,1 =2,0	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b: rev/min 4a 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
LDA 1250	0,8 bar 109,0-111,0 (107,0-113,0)	1290-1300*	LDA 900	0,8 bar 115,0-121,0 (113,0-123,0)	100	min. 170,0	1250	9,6+0,1
					325	17,0-23,0	900	10,1+0,1
			LDA 800	0 bar 73,0-81,0 (71,0-83,0)			700	9,8+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.83

E21

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

E21

D. Adjustment Test for Manifold Pressure Compensator

IHC 9,4a

Test at n = 800 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 8 P..RS 286 +RQV..PA 445 KR	0,11-0,16	0,82-0,87	Start End

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 11
3. Edition
En

Testoil-ISO 4113

PES 6 P 110 A 720 LS295 RQ 250/1100 PA335DR (1)
..PA351DR (2)
..LS345 RQ 250/1100 PA335DR (3)

Komb.-Nr. 0 402 046 152 (1)
0 402 046 150 (2)
0 402 046 752 (3)

supersedes 10.77
company: M A N
engine: D 2566MT/MTUH

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,6 - 14,8	0,4(0,8)			
250	6,8-7,0	0,9 - 1,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

335DR und 351DR

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
500	19,2-20,8	600	20,0	11,2	1145-1160	250	6,9	100	min. 8,5	1100	12,1-12,2
VH = max. 46°				4,0	1200-1230			250	6,8-7,0	1000	12,3-12,5
				1300	0 - 1,0			370-410	=2,0	800	12,6-12,8
										700	12,8-12,9

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation Al 1145 - 1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ Change-over point rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1100	0,7 bar 145,0 - 148,0 (142,5 - 150,5)		LDA 500	0,2 bar 123,0 - 127,0 (120,0 - 130,0)	100	215 - 235
700	157,0 - 161,0 (154,0 - 164,0)		LDA 500	0 bar 110,0 - 113,0 (107,0 - 116,0)	100-	170 (80-190)

Checking values in brackets

7.83

E23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
295 + 335 DR 351 DR	0,70		12,8 - 12,9
		0,32	12,2 - 12,4
and			
345 + 335 DR		0,20	11,5 - 11,6
		0	10,9 - 11,0

Notes

(1) when n = rev/min and gauge pressure - bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 20,2 a

1. Edition

En

PE 8 P 120 A 620/4 LS 325 RSUV 250-600 P 8 A 321 R
1-4-7-6-8-5-2-3 je 45° ± 0,50 (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes –
company KHD
engine BA 8 M 816
Komb.-Nr. 0 401 878 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	~~14,9+0,1~~	28,7-29,1 (~~28,4-29,4~~)	0,5(0,9)			
250	6,0-6,2	1,6-2,3 (1,3-2,6)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	775	0,3-1,0	-	-	-	ca.25	250	5,6	600	14,9-15,0
	X = 4,0						250	6,0-6,2	220	16,2-16,8
ca.65 (2a)	13,9	640-650					260-320 = 2,0		350	14,9-15,0
	4,0	660-690								
	800	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Carry out adjustment on engine.		640-650 *	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

F1

Test Specifications Fuel Injection Pumps and Governors

WRP 001/4 6.Edition En Vol 7,0 e

Testoil-ISO 4113

PE 6 P 110 A 320 RS 367 RQV 250-1200 PA394/2R (1) supersedes 480
RS 367Z PA394/2R (2) compare Volvo
RS 367Y PA394/2R (3) engine TD 70 F
(1-174kW-237PS)
(2-155kW-210PS)
(3-180kW-245PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	12,1 - 12,3	0,4(0,8)	10,9+0,1	10,0 - 10,2	2,5± 0,1** (max.2,2-2,9)
250	4,7-4,8	1,1 - 1,5	0,3(0,6)	4,7-4,8	1,1 - 1,5	

Adjust the fuel delivery from each outlet according to the values in [ ].
**In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 68	1200 1500	15,2-17,8 0-1	-	-	-	ca.12	100 250 420-470 600	min.6,3 4,7-4,9 =2,0 0-1	200 1230	0,3-1,2 8,2
ca.68	10,9 4,0	1260-1270 1370-1400				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
(1) 700	LDA 0,7 bar 121,0-123,0 (118,0-126,0)	1260-1270*	LDA 700	0 bar 78,5 - 80,5 (75,5 - 83,5)	100 250	165 - 200 11-15)** Dispersion max.3		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

F2

F2

B. Governor Settings

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2)	Upper rated speed: Control rod travel mm rev/min (1a, 2a)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min	Intermediate rated speed: Control rod travel mm	Lower rated speed: Degree of deflection of control lever (3a)	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	Sliding sleeve travel (1): mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca.12	100	min.6,5	200	0,3-1,2
							250	4,7-4,8		
									1230	8,2
ca.67	9,9	1265-1275								
	4,0	1360-1385								
	1450	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min	Full-load delivery: cm³/1000 strokes	Rotational-speed limitation intermediate speed (2b, 4a): rev/min	Fuel delivery characteristics high idle speed (5a, 5b): rev/min	Fuel delivery characteristics high idle speed: cm³/1000 strokes	Starting fuel delivery Idle switching point (6): rev/min	Starting fuel delivery Idle switching point: cm³/1000 strokes	Torque-control travel (5): rev/min	Torque-control travel: Control rod travel mm
1	2	3	4	5	6	7	8	9
700	LDA 0,7 bar	1265-1275*	LDA	0 bar	100	165,[illegible] 200,0	-	-
	100,0-102,0		700	78,5 - 80,5		= 20,0-21,0		
	(97,0-105,0)			(75,5 - 83,5)		mm RW		
					250	11 - 15)**		
					Streuug. max. 3			

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

367Y (3)

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2)	Upper rated speed: Control rod travel mm rev/min (1a, 2a)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min	Intermediate rated speed: Control rod travel mm	Lower rated speed: Degree of deflection of control lever (3a)	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	Sliding sleeve travel (1): mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1200	15,2-17,8				ca.12	100	min. 6,3		
	1450	0-1					250	4,7-4,8		
ca.68	11,3	1240-1250								
	4,0	1355-1390								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min	Full-load delivery: cm³/1000 strokes	Rotational-speed limitation intermediate speed (2b, 4a): rev/min	Fuel delivery characteristics high idle speed (5a, 5b): rev/min	Fuel delivery characteristics high idle speed: cm³/1000 strokes	Starting fuel delivery Idle switching point (6): rev/min	Torque-control travel (5): rev/min	Torque-control travel: Control rod travel mm
1	2	3	4	5	6	8	9
LDA	0,7		LDA	0 bar			
700	129,0-131,0	1240-1250*	700	78,5 - 80,5	100		
	(126,0-134,0)			(75,5 - 83,5)			
					250		
					11-15**		
					* Dispersion max. 3		

Checking values in brackets

* 1 mm less control rod travel than col. 2

F3

En

F3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / ~~increasing~~ pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel ~~diminution~~ / ~~difference~~ mm (1)
367 + 394/2R	0,48	0,27	11,5 - 11,6 10,3 - 10,5
367Z + 394/2R	0,36	0,23	10,6 - 10,7 9,9 - 10,1
367Y + 394/2R	0,53	0,26	11,8 - 11,9 10,3 - 10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F4

En F4

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 STE 10,0b
6. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 721 RS 369

RQ 300/1300 PA 412 DR
RQV250-1300 PA 413 DR

supersedes 1.82
company: Steyr
engine: WD 615.60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,5+0,1	11,7 - 11,9	0,4(0,75)			
250	9,0-9,2	1,8 - 2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

RQ 412 DR

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	11,5	1345-1360	300	6,0	100	min. 7,4	1300	12,5-12,6
				4,0	1405-1435			300	5,9-6,1	700	12,8-12,9
				1550	0 - 1,0			390-430	=2,0	900	12,6-12,8
										1100	12,6-12,7

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar		LDA	0,7 bar		
1300	117,0 - 119,0 (114,0 - 122,0)		700	107,0 - 111,0 (104,0 - 114,0)	100	115,0 - 135,0
			LDA 700	0 bar 100,0 - 102,0 (97,0 - 105,0)		

Checking values in brackets

7.83

F5

F5

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min ①a ②a	Degree of deflection of control lever	rev/min	Control rod travel mm ④	Degree of deflection of control lever	rev/min	Control rod travel mm ③	rev/min	mm +0,1
1	2	3	4	5	6	7	8	9	10	11
ca.50	1300 1550	15,2-17,8 0-1	-	-	-	ca.15	100 250 420-480 500	min.10,5 9,3-9,5 =2,0 0-1	1300 1000 700	12,6 12,9 13,0
ca.47	11,6 4,0	1340-1350 1450-1480				③a				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery ⑥ idle switching point		Torque-control ⑤ travel Control rod travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 1300	0,7 bar 115,0-117,0 (112,0-120,0)	1340-1350*	LDA 700	0,7 bar 108,0-111,0 (105,0-114,0)	100	120 - 130		
			LDA 700	0 bar 102,0-104,0 (99,0-107,0)		100-170 (80-190)		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm
369 + 412 DR	0,70	0 0,31 0,27	12,8 - 12,9 12,5 - 12,6 12,7 - 12,8 12,6 - 12,7
369 + 413 DR	0,7	0,35 0,33 0	13,0 - 13,1 12,9 - 13,0 12,7 - 12,8 12,8 - 12,9

En

F6

PES 6 P 120 A 720 LS 388 RQ 250/1050 PA 452

supersedes 9.82
company MAN
engine D 2566 MKF 235 kW

Komb.-Nr. 0 402 046 244
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5 (0,9			
250	6,3-6,5	1,1-1,7	0,8 (1,2			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1095-1110	250	6,4	100	min. 7,9	1100	11,3-11,4
VH =	max. 46°			4,0	1175-1205			250	6,3 - 6,5	750	13,1-13,2
				1350	0-1,0			340-380	= 2,0	890	12,7-12,9
										960	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,7 mm

Speed regulation: At 1095-1110 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	1,0 bar	-	LDA	0,34 bar	100	205,0-225,0
750	217,0-220,0		500	144,0-150,0		(201,0-229,0)
	(214,0-223,0)			(141,0-153,0)		
LDA	1,0 bar		LDA	0 bar		
1050	180,0-186,0		500	101,0-104,0		
	(177,0-189,0)			(98,0-107,0)		

Checking values in brackets

7.83

F7

F7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

MAN 11,1 r 3

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388		1,0	13,1 - 13,2
with RQ..PA 452		0	9,4 - 9,5
	0,34		10,5 - 10,6
		0,61	12,1 - 12,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F8

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1q7
2. Edition
En

Testoil-ISO 4113

PES 6 P120 A 720 LS 388 RQ250/1100 PA 509 (1)
RQV250-1100 PA 504 (2)

supersedes 5.80
company: MAN
engine: D 2566 MK
206 Kw (280 PS)

Komb.-Nrn. 0 402 046 208 (1)
0 402 046 209 (1)
0 402 046 204 (2)
0 402 046 205 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4-11,5	17,7 - 18,1	0,5(0,9)			
250	6,2-6,4	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ - 509

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3
1100				4,0	1180-1210			250	6,2-6,4	975	10,4-10,6
1400	0 - 1,0	VH ca. 49°								875	11,0-11,1
								350-390 = 2,0			
	Breakaway									750	11,4-11,5

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 750	0,7 bar 177,0 - 181,0 (174,0 - 184,0)		LDA 650	0,7 bar 171,0 - 177,0	100	215,0-235,0
			LDA 500	0,31 bar 134,0 - 140,0	250	12,0- 18,0
LDA 1100	0,7 bar 166,0 - 172,0 (162,5 - 175,5)				100-170 (80-190)	
			LDA 500	0 bar 102,0 - 106,0		

Checking values in brackets

(increase by 4-5 ± 3 cm³

7.83

F9

B. Governor Settings

RQV - 504

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1100	15,2-17,8					ca. 15	100	min.7,8	250	1,2
								250	6,2-6,4	500	4,0-4,3
ca.66	9,2	1140-1150						395-455= 2,0		1150	8,4
	4,0	1220-1250									
	1400	0 - 1,0					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1140-1150*	LDA	0,7 bar	100	215,0-235,0	1100	11,4-11,5
750	177,0 - 181,0		650	171,0 - 177,0			975	10,4-10,6
	(174,0 - 184,0)		LDA	0,31 bar	250	12,0- 18,0	875	11,0-11,1
LDA	0,7 bar		500	134,0 - 140,0			750	11,4-11,5
1100	166,0 - 172,0		LDA	0 bar	100-170 (80-190)			
	(162,5 - 175,5)		500	102,0 - 106,0				

Checking values in brackets (increase by 4-5 ± 3 cm³

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm
388 + 509	0,7		11,4 - 11,5
		0,43	10,9 - 11,1
		0,31	10,3 - 10,4
		0	9,2 - 9,3
388 + 504	0,7		11,4 - 11,5
		0,43	10,9 - 11,1
		0,31	10,3 - 10,4
		0	9,2 - 9,3

En

F10

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MAN 11,1 q 11
1. Edition
En

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 658-6

Komb.-Nr. 0 402 046 260, 0 402 046 261

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes –

company: MAN

engine: D 2566 MKF
235 kW (320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4-	100	min.7,9	1100	11,3-11,4
VH = max. 46°				4,0	1185-1215			250	6,3-6,5	750	13,1-13,2
				1400	0 - 1,0			350-390	=2,0	900	12,6-12,7
										1000	11,8-12,0

Torque-control travel on flyweight assembly dimension a = 0,7 mm

Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0	–	LDA 650	1,0 bar 208,0-213,0 (205,0-216,0)	100	205,0-225,0
LDA 1100	1,0 bar 180,0-185,0 (177,0-188,0)		LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)		
			LDA 500	0 bar 101,0-104,0 (98,0-107,0)		

Checking values in brackets

6,83

F11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution / difference mm (1)
PES 6 P.. LS388 +RQ..PA658-6	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F12

F12

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 11,1 q 16

1. Edition

En

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 658-7

Komb.-Nr. 0 402 046 263, 0 402 046 262

superseded MAN
company D 2566 MK
engine 206 kW (280 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	17,7-18,0	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH=max.46°	19,2-20,8	600	20,0	9,2 4,0 1400	1145-1160 1180-1210 0-1,0	250	6,3	100 250 350	min.7,8 6,2-6,4 390=2,0	1100 750 875 975	10,2-10,3 11,4-11,5 11,0-11,1 10,4-10,6

Torque-control travel on flyweight assembly dimension a = 0,45 mm. Speed regulation: At 1145-1160 min⁻¹. 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 750	0,7 bar 177,0-180,0 (174,0-183,0)	-	LDA 500	0,31 bar 131,0-136,0 (128,0-139,0)	100	205,0-225,0
LDA 1100	0,7 bar 160,0-165,0 (157,0-168,0)		LDA 500	0 bar 103,0-106,0 (100,0-109,0)		

Checking values in brackets

F13

7.83

F13

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 16

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 388 +RQ..PA 658-7	0,31	0,70 0 0,43	10,3-10,4 11,4-11,5 9,2-9,3 10,9-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F14

En F14

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 15

1. Edition

En

PES 6 P 120 A 720 LS 388 RQV 250-1050 PA 671-2

supersedes

company MAN

engine: D 2566 MK/319
235 kW

Komb.-Nr. 0 402 046 278

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 ~~(2,95-3,15)~~ mm (from BDC) Zyl. 6; RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min.7,9	300	1,5-1,8
							250	6,3-6,5	850	5,8-6,0
ca. 61	10,3	1090-1100					385-445=2,0		1050	7,6
	4,0	1180-1210								
	1300	0-1,0				(3a)				

Torque control travel a = 1,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	1090-1100*	LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)	100	205,0-225,0 (201,0-229,0	750	13,1+0,1
							1050	11,3+0,1
							850	12,6+0,2
LDA 1050	1,0 bar 180,0-185,0 (177,0-188,0		LDA 500	0 bar 101,0-104,0 (98,0-107,0)			950	11,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

F15

FAS

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 15

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS 388 +RQV..PA 671-2	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 14

1. Edition En

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 671-1

supersedes

company: MAN

engine D 2566 MK 235 kW

Komb.-Nr. 0 402 046 277

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11 (3a)	100	min.7,9	300	1,5-1,8
ca. 64	10,3	1140-1150					250	6,3-6,5	850	5,8-6,0
	4,0	1220-1250					385-445	=2,0	1100	8,1
	1350	0-1,0								

Torque control travel a = 1,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4b): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar	1140-1150*	LDA 500	0,34 bar	100	205,0-225,0	750	13,1+0,1
	217,0-220,0			145,0-150,0		(201,0-229,0	1100	11,3+0,1
	(214,0-223,0)			(142,0-153,0			860	12,6+0,2
LDA 1100	1,0 bar		LDA 500	0 bar			985	11,7+0,3
	180,0-185,0			101,0-104,0				
	(177,0-188,0			(98,0-107,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

F17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 14

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388 +RQV..PA 671-1	1,0		13,1-13,2
		0	9,4-9,5
		0,34	10,9-11,0
		0,61	12,5-12,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 c
2. Edition
En

PE 6 P 120 A 321 RS 359 RQV 275-1200 PA 538
Komb.-Nr. 0 401 856 148
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 4.81
company: RVI
engine: MID 06.20.30
140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,5-9,6	13,0-13,2	0,5(0,9)			
275	4,6-4,8	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1280	15,2-17,8	-	-	-	ca. 9 ③a	100	min. 6,2	275	1,1-1,3
ca. 63	8,5	1240-1250					275	4,6-4,8	950	5,6-5,8
	4,0	1300-1330							1200	7,6-7,8
	1450	0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1200	130,0-132,0 (127,0-135,0)	1240-1250*	-	-	100	190,0-210,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

F19

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

F19

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6k3
2. Edition

En

PE 6 P 110 A 320 RS 372-1 RSV 250-1100 P5/458 R
P5/458-1

supersedes 11.82
company DAF
engine DKTD 1160
191 kW (260 PS)

See Service Information VDT-I-DAF 004.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,9+0,1	13,5 - 13,7	0,4 (0,8)			
250	6,6-6,8	0,7 - 1,1	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,2	400	12,1+0,1
	x =	4,25					250	6,5-6,8	300	12,3+0,5
ca. 51	10,9	1140-1150					640-700	= 2,0		
(2a)	4,0	1275-1305								
	1425	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 134,5-136,5 (132,0-139,0)	1140-1150*	LDA 600	bar 125,0-128,0 (122,0-131,0)	100	245,0-285 = 19,5-21 mm RW	0 250	6,6-6,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

F20

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P..RS 372-1	0,30		11,8-11,9
+ .. P5/458		0,70	11,9-12,0
u. ..P5/458-1		0	11,3-11,4
		0,26	11,5-11,7

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 k 2
2. Edition

En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P5/458 R

supersedes 9.82
company DAF
engine DKX 1160
243 kW
Komb.-Nr. 0 401 876 261

See Service Information VDT-I-DAF 004
Values only apply to test nozzle-and holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,3-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 5,0	-	-	-	ca. 24	250	6,0	400	11,6-11,7
									300	11,8-12,3
ca. 54 (2a)	10,4	1140-1150					250	6,4-6,6		
	4,0	1270-1300					620-680	= 2,0		
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 183,0-186,0 (180,0-189,0)	1140-1150*	LDA 600	0 bar 135,0-138,0 (132,0-141,0)	100	315,0-355,0 (311,0-359,0) = 19,5-21,0 mm RW	250	6,5

Checking values in brackets

* 1 mm less control rod travel than col 2

7.83

F22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 372-1y + ..P5/458 R	0,37	0,70 0 0,30	11,0-11,1 11,4-11,5 10,0-10,1 10,3-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 VOL 7,0 h
4. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 390 RSV 200 - 750 P 4/421
Komb.-Nr. 0 401 876 249 RSV 650-750 P 4/421

supersedes 11.82
company Volvo
engine TD 70 GG

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,7+0,1	10,2 - 10,4	0,4(0,8)			2,5+0,1** (max.2,2-2,9)
300	5,4-5,6	1,9 - 2,9	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ]

**In the case of greater dispersion after the delivery-valve spring pre-tension accordingly

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 4,0			ca.18	300	5,5		
ca.37 (2a)	750-755=9,7 775-785=4,0 1000=0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to . .) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	102,0 - 104,0 (97,0 - 105,0)	750-755*						

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

F24

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

F24

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 STE 10,0a
2. Edition
En

Testoil-ISO 4113

PE 6 P 100 A 721 RS398 — RQV 250-1300 PA480R (1)
RQ 300/1300 PA481R (2)

supersedes 1.80
company: Steyr
engine: WD 615.00

Komb.-Nrn. 0 401 856 145 (1)
0 401 856 144 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,50-3,60 (3,45-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1300	11,3-11,4	9,3 - 9,5	0,35(0,6)	11,3-11,4	9,3 - 9,5	n 1300
250	9,0-9,2	1,8 - 2,2	0,35(0,55)	8,5-8,7	1,2 - 1,8	300

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQV...480R

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca.14	100	min.10,5	250	0,8-1,0
							250	9,0-9,2	650	4,4-4,7
									1340	8,8
ca. 47	10,3	1340-1350								
	4,0	1405-1435				415-475 (3a)				
	1550	0 - 1,0								

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1300	93,0 - 95,0 (91,0 - 97,0)	1340-1350*	600	77,0 - 80,0 (74,5 - 82,5)	100	100,0-120,0	1300	11,3-11,5
							1050	11,4-11,6
							500	11,6-11,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

G1

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

G1

RO...481

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,5-16,5	600	16,0	10,3	1345-1355	300	6,0	100	min. 7,5	1300	11,3-11,4
				4,0	1400-1430			300	5,9-6,1	1030	11,3-11,6
1300	Breakaway							395-435	=2,0	600	11,7-11,8
1550	0 - 1										

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1300	92,0 - 94,0 (89,0 - 97,0)		600	81,0 - 84,0 (78,0 - 87,0)	100	116,0 - 126,0

Checking values in brackets

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

G2

En

G2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 b 2
2. Edition
En

PES 6 P 120 A 320 RS 417 RQV 300-1150 PA 527-1K

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

superseded 8.82
company RVI
engine MIDR 062030
Komb.-Nr. 0 402 046 247

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,5-8,6	14,8-15,0	0,5 (0,9)			
300	4,1-4,3	1,8-2,4	0,5 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Port closing mark at 6° camshaft after port closing for 1st. cylinder at control-rod travel 9.0-12.0 mm.

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 5,7	250	0,4-0,7
ca. 58	7,5	1205-1215					300	4,1-4,3	550	3,6-3,7
	4,0	1275-1305							850	5,1-5,2
	1450	0 - 1,0				330-445 (3a)			1150	7,5

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	147,5-149,5 (144,5-152,5)	1205-1215*	750	132,0-138,0 (129,0-141,0)	100	130,0-150,0	1150	8,5+0,1
							350	7,0+0,4
			500	80,0-86,0 (77,0-89,0)	300	18,0-24,0	750	7,7+0,2
						100-220 (80-240)	500	7,2+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

G3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 60. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

69

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 1
2. Edition
En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 2.83
company: RVI
engine: MIDR 062045
206 kW (280 PS)
Komb.-Nr.
0 402 046 249

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port-closing mark 10,5° camshaft after port closing of cylinder 1.

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	17,8 - 18,0	0,5(0,9)			
275	3,4-3,6	0,7 - 1,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 8	200	min.5,2	250	1,0-1,2
							275	3,4-3,6	530	4,0-4,6
ca.64	9,3	1155-1165							820	5,9-6,1
	4,0	1220-1250				280-395			1100	8,1
	1350	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 178,0-180,0 (175,0-183,0)	1155-1165*	LDA 700	0,7 bar 163,0-171,0 (160,0-174,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

G4

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

G4

D. Prova dell'anticipo con arresto dipendente dalla pressione di alimentazione (LDA)

RVI 8,8 d 1

Prova a n = 500 min $^{-1}$ - pressione $\begin{matrix}\text{in aumento}\\\text{in diminuzione}\end{matrix}$ - sovrapressione in bar

Pompa/Regolatore	Regolazione pressione relativa = bar	Misurazione pressione relativa = bar	Corsa asta - Diminuzione / Differenza mm (1)
PES 6 P..RS 419 + RQV..PA 495	0,25	0,70 0 0,20	9,7 - 9,8 10,3 - 10,4 8,3 - 8,5 8,8 - 9,0

Note

(1) rispetto a n = min $^{-1}$ e pressione relativa = bar (= corsa massima dell'asta a pieno carico)

G5

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RVI 12,0 c
2. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 320 RS 426 RQV 250-1100 PA 570
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 10.81
company: RVI
engine: MIDS 063540
195 kW (265 PS)
Komb.- Nr. 0 402 046 219

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	10,3+0,1	18,0 - 18,3	0,5(0,9)			
250	4,9-5,1	1,3 - 1,9	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

Mark for start of pump delivery on tester body 12° after start of pump delivery, cylinder No. 1 = 9,0 - 12,0 mm.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 9	100	min. 5,5	200	0,7-1,0
ca. 61	8,1	1140-1150					250	3,9-4,1	500	3,4-3,6
	4,0	1220-1250							800	4,8-4,9
	1400	0 - 1.0				275-400			1100	6,9
						(3a)				

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 180,0-183,0 (177,0-186,0)	1140-1150 *	LDA 1100	0,7 bar 170,0-173,0 (167,0-176,0)	100	135,0-155,0	1100	9,1+0,2
							650	10,3+0,1
							1030	9,4+0,1
			LDA 500	0 bar 122,0-126,0 (119,0-129,0)			890	9,9+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.83

G6

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

66

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P.. RS 426 + .. PA 570	0,9	0 0,29 0,24	10,3 - 10,4 8,6 - 8,7 9,8 - 9,9 9,0 - 9,2

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 11,4 a
3. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 320 LS 429

RQV 250-1100 PA 582 (1)
RQ 250/1100 PA 581 (2)

superseded 4.81
company: MAN
engine: D2566 MKUL
235 kW (320 PS)

Komb.-Nr. 0 402 046 223 (1)
0 402 046 222 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95 - 3,15) mm (from BDC) Zyl.6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,9 +0,1	22,0 - 22,4	0,5(0,9)			
250	6,2-6,4	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

RQV .. PA 582

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8				ca. 13	100	min.7,8	250	1,6-1,7
							250	6,2-6,4	500	4,0-4,3
ca. 68	10,4	1140-1150							800	5,5-5,7
	4,0	1225-1255				355-475				
	1400	0 - 1,0				(3a)			1100	8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation, intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes * 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 220,0-224,0 (217,0-227,0)	1140-1150*	LDA 1100	1,0 bar 185,0-191,0	100	215,0-235,0	1100	11,4
			650	212,0-218,0	250	12,0- 18,0	750	12,9
			LDA 500	0,29 bar 138,0-144,0			895	12,5
			LDA 500	0 bar 115,0-119,0			980	11,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

* Checking tolerance ± 3 cm³

7.83

G8

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

G8

B Governor Settings

Checking of slider PRG check ①		Full load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,4	1145.1160	250	6,3	100	min.7,8	1100	11,4-11,5
				4,0	1185-1215			250	6,2-6,4	1005	11,7-12,0
										925	12,5-12,7
		1300			0 - 1,0			335-	875=2,0mm	750	12,9-13,0

Torque control travel on flyweight assembly dimension a mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40° C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
			*			Control rod travel
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / mm
1	2	3	4	5	6	7
LDA	1,0 bar	-	LDA	1,0 bar	100	215,0-235,0
750	220,0-224,0		1100	185,0 - 191,0		
	(217,0-227,0)		650	212,0 - 218,0		
			LDA	0,29 bar		
			500	138,0 - 144,0		
			LDA	0 bar		
			500	115,0 - 119,0		

Checking values in brackets

* Checking tolerance ± 3 cm^3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure bar	Measurement Gauge pressure bar	Control rod travel - diminution / difference mm (1)
.. LS 429 -	1,0	0	12,9 - 13,0
RQV..PA 582		0,29	9,6 - 9,7
+		0,58	10,5 - 10,6
RQ..PA 581			12,3 - 12,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

(1A)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 9,5 a 2

2. Edition

En

Testoil-ISO 4113

PES 5 P 110 A 820 LS 434 RSV 350-750 P 1/487

superseded 6.82

company Daimler-Benz

engine OM 409

1 - 3 - 5 - 4 - 2 je 72° ±0,5° (±0,75°)

Komb.-Nr. 0 402 075 001

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 5; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	13,1+0,1	13,5 - 13,7	0,4(0,8)			
350	7,7 -7,9	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	-	-	-	-
	x =	2,5								
ca. 34 (5)	12,1	750-755								
	4,0	785-795								
	850	0,3-1,7								

Set idle-speed auxiliary spring at 2 mm control-rod travel

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
730	135,0-137,0 (132,0-140,0	750-755*	-	-	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

G10

BOSCH

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 RVI 14,9 a

2. Edition

En

Testoil-ISO 4113

PES 8 P 120 A 320 RS 437 RQ 750 PA 596
Komb.-Nr. 0 402 048 038
1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45° ± 0,5° (0,75°)

supersedes 4.81
company RVI
engine MIVS (R) 083 530
250 kW (340 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) Zyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1+0,1	26,7 - 26,9	0,5(0,9)			
250	5,0-5,2	1,5 - 2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,1 4,0 900	750-755 776-789 0 - 1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: A 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
700	267,0-269,0 (264,0-272,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

7.83

GAA

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 b 1

2. Edition

En

PE 6 P 120 A 321 RS 438 RQV 275-1200 PA 648

supersedes 83
company RVI
engine MID 062045
Komb.-Nr. 0 401 856 153

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,2+0,1	13,4-13,7	0,5(0,9)			
275	5,9 - 6,1	0,7-1,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	250	0-0,9
							275	5,9-6,1	570	4,7-5,0
ca. 65	10,2	1240-1250							880	6,1-6,3
	4,0	1335-1365							1200	8,3
	1500	0-1,0				270-365 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	134,0-137,0 (131,0-140,0)	1240-1250*	-	-	100	180,0-200,0	-	-
					275	7,0-13,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

G12

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

GAL

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 u

3. Edition

En

PE 6 P 110 A 720 RS 441 RSV 250-1200 P 5/493

Komb.-Nr. 0 401 876 252

supersedes 1.83
company DAF
engine DHS 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	13,7-13,9	0,4(0,8)			
250	5,0-5,2	0,7-1,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 X = 5,0	0,3-1,0	-	-	-	ca. 24	250	4,6	400	12,4-12,5
							250 525-585=2,0	5,0-5,2	300	12,6-13,1
ca. 58 (2a)	11,2	1240-1250								
	4,0	1330-1360								
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 136,5-138,5 134,0-141,0)	1240-1250*	LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-289,0 (241,0-289,0) =19,5-21,0 mm RW	250	5,1

Checking values in brackets

* 1 mm less control rod travel than col 2

7.83

G13

G13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 441 + RSV..P 5/493	0,70	0 0,36 0,30	12,2-12,3 10,2-10,3 11,7-11,8 10,9-11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 u 2

1. Edition

En

PE 6 P 110 A 720 RS 441-1 RSV 250-750 P 7/479-1

Komb.-Nr. 0 401 876 270

superseded
company DAF
engine DHS 825 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,6+0,1	14,5-14,7	0,4(0,75)			
250	4,8-5,0	0,9-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	4,9	-	-
	x =	4,0					250	4,8-5,0		
ca. 45 (2a)	10,6	790-795					250-290	= 2,0 **		
	4,0	810-825								
	950	0,3-1,7								

The numbers denote the sequence of the tests

Set auxiliary idle spring at 2.0 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	144,5-146,5 (142,0-149,0)	790-795*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

7.83

G15

615

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 1 4
3. Edition
En

Testoil-ISO 4113

PES 6 P 110 A 820 LS 442 RSV 350-750 P 1/487
Komb.-Nr. 0 402 076 052

supersedes 1.83
company Daimler-Benz
engine: OM 407
121 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	12,1 +0,1	11,9 - 12,1	0,4(0,8)			
350	8,1-8,3	1,3 - 2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	-	-	-	-
	x=2,5									
(5) ca.35	11,1	750-755								
	4,0	785-795								
	850	0,3-1,7								

Set idle-speed auxiliary spring at 2 mm control-rod travel

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
730	119,0 - 121,0 (116,0 - 124,0)	750-755*	-	-	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

G16

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 8,3 o
1. Edition
En

PE 6 P 100 A 720 RS 447 RSV 250-1200 P5/493
Komb.-Nr. 0 401 876 260

supersedes
company DAF
engine DHT 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,8-12,0	0,3(0,6)			
250	5,3-5,5	0,7-1,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.24	250	4,9	400	11,6-11,7
	x =	5,0					100	min. 7,0	300	11,8-12,1
ca.58	10,4	1240-1250					250	5,3 - 5,5		
(2a)	4,0	1325-1355					540-600	= 2,0		
	1530	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to ...) rev/min 3	(3a) Fuel delivery charactenstics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 118,0-120,0 (116,0-122,0)	1240-1250*	LDA 600	0 bar 94,0-97,0 (92,0-99,0)	100	190,0-210,0 bei 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

G17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P..RS447 + RSV..P5/493	0,32		11,1 - 11,2
		0,70	11,4 - 11,5
		0	10,4 - 10,5
		0,23	10,5 - 10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 BAO 10,6 a
2. Edition
En

PES 4 P 120 A 320 RS 451 RQV 350-900 PA 618
Komb.-Nr. 0 402 044 020
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 1.83
company: Baudouin
engine: DNP 4
107 kW (145 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca.30	100	min.9,2	325	1,1-1,3
ca. 60	11,6	940-950					350	7,6-7,8	500	3,1-3,8
	4,0	1000-1030							750	6,0-6,4
	1150	0-1,0				350-440 (3a)			900	8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	197,0-199,0 (194,0-202,0)	940-950*	-	-	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

G19

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

C19

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 BAO 13,2 a
2. Edition
En

PES 5 P 120 A 320 RS452 RQV 350-900 PA 618
1 - 2 - 4 - 5 - 3 je 72° ±0,5° (±0,75°)

superseded 7.83
company Baudouin
engine: DNP 5
Komb.-Nr. 0 402 045 025

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,8-2,9 mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca.30	100	min.9,2	325	1,1-1,3
							350	7,6-7,8	500	3,1-3,8
ca.60	11,6	940-950							750	6,0-6,4
	4,0	1000-1030				350-440			900	8,0
	1150	0-1,0				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	197,0-199,0 (194,0-202,0)	940-950*	-	-	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

G20

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

620

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MAN 11,9 a
1. Edition
En

PE 6 P 120 A 720 LS 470 RQ 250/1100 PA 684
Komb.-Nr. 0 402 046 288
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes-
company: MAN
engine D 2866 KF 265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min.6,8	750	12,5-12,6
				4,0	1180-1210			250	5,2-5,4	1100	11,3-11,4
				1300	0-1,0			315-355	= 2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,45 mm
Speed regulation: At 1145-1160 min⁻¹
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	-	LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

9.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..LS470 + RQ..PA684	1,0	0	12,5 - 12,6 9,3 - 9,4
		0,40	11,1 - 11,2
		0,24	9,8 - 10,2

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

G22

En G22

Test Specifications Fuel Injection Pumps and Governors

② WPP 001/1 MB 12,8b2

3. Edition

En

PE 8 P 100 A 320 LS 810 RQ 300/1250 PA 187 R

Komb.-Nr. 0 401 848 038

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

superseded 10.79

company: Daimler-Benz

engine: OM 402
188 kW (256 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testors

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 -3,5 (3,35-3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,6+0,1	10,2-10,4	0,3(0,6)			
300	7,4-7,6	1,3- 1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	9,6	1295-1310	300	7,5	100	min.9,0	1250	10,6-10,7
				4,0	1345-1375			300	7,4-7,6	600	10,6-10,8
				1500	0-1,0			405-445	= 2,0		

Torque-control travel on flyweight assembly dimension a = – mm

Speed regulation: At 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/–1000 strokes 2	rev/min 3	rev/min 4	cm³/–1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
1250	102,0 - 104,0 (100,0 - 106,0)	600	600	79,0 - 84,0 (77,0 - 86,0)	100	110,0 - 130,0

Checking values in brackets

8.83

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 a

9. Edition

En

PE 8 ZWM 140/120 RS 19/11 RQU 375/1100 ZWA 19 DR
RQU 375/1100 ZWA 25 DR

Replaces -
Firm: MTU
Engine: MB 837 A a

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (± 0,75°)

See Service Information VDT-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	369,0-382,0	
600	9,0	143,0-163,0	14,0(21,0)	148,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	8 (12)		
500	-	C, Sp. 5	11 (16)		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Medium rated speed Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control min⁻¹ 10	Control-rod travel mm 11
max.	500	23,5-24,0	-	-	-	ca. 22	150	12,0-14,0	500	21,7-22,1
ca. 58	1100	19,0-19,5					375	5,6-6,0	700	20,9-21,5
	1130	15,0-18,0					500	2,3-3,1	1000	19,5-20,0
	1200	6,2-12,4					600	2,1-2,6	1100	19,0-19,5
	1250	0- 7,8					1100	0,4-1,6	1120	max. 1 mm
	1350	0- 1,8					1180	0	-1130	less
		0,8								

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
1080	232,0-236,0 (229,0-239,0)		500	212,0-220,0 (209,0-223,0)	-	-

Checking values in brackets

1.83

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 11,9 a1

1. Edition

En

PE 6 P 120 A 720 LS 470 RQV 250-1100 PA 700

Komb.-Nr. 0 402 046 295

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes_

company: MAN

engine. D2866 KF 265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2- 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1170	15,2-17,8	-	-	-	ca.9	100	min.6,8	325	1,6-2,0
ca.62	10,3	1140-1150					250	5,2-5,4	800	5,3-5,5
	4,0	1225-1255					360-420=2,0		1100	7,8
	1350	0 - 1,0				(3a)				

Torque control travel a = 1,15 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	1140-1150*	LDA 500	0,4 bar 193,0-195,0 (190,0-198,0)	100	225,0-245,0 (221,0-249,0)	750	12,5+0,1
							1100	11,3+0,1
							900	12,1+0,2
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)			1000	11,5 0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

H1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

H1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure ≈ bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P..LS 470 +RQV..PA 700	1,0	0	12,5-12,6
		0,40	9,3-9,4
		0,24	11,1-11,2
			9,8-10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

H2

En H2

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 9,6 h

2. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 320 LS805 RQ 300/1150 PA436R (1)
EP/RSV 575-1250 P1/817R (2)

supersedes 10.78

company Daimler-Benz

engine OM 401

(1 = 141 kW - 192PS)
(2 = 129 kW - 175PS)

Komb.-Nr. 0 401 846 406 (1)
0 401 876 203 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Zyl.6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,5+0,1	10,1 - 10,3	0,3(0,6	10,1 +0,1	9,3 - 9,5	n = 1230
350	7,8-8,0	2,5 - 3,0	0,3(0,5)	6,0-6,2	1,2 - 1,8	n = 575

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

436R (1)

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	13,8-14,6	650	14,2	9,5	1180-1195	300	7,9	100	min.9,4	-	-
				4,1	1250-1280			300	7,8-8,0		
				1400	0 - 1,0			360-400	=2,0		

Torque-control travel on flyweight assembly dimension a = - mm. Speed regulation: At 1180-1195 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
(1) 1130	101,0 - 103,0 (99,0 - 105,0)	650	-	-	100	110,0 - 130,0 (106,0-134,0)

Checking values in brackets

./.

7.83

H3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

H3

B. Governor Settings

817R (2)

(1A)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0				ca.30	575	4,7	**	
	x	4,0					200	min.19		
ca.63	9,1	1265-1275					575	4,6-4,8		
	4,1	1290-1305					570-630	= 2,0		
(5)	1400	0,3-1,7					650	0 - 1		

** Set idle-speed auxiliary spring at 2,0 mm control-rod travel then 1/4 turn back

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(2) 1230	93,0-95,0 (91,0-97,0)	1265-1275*	(6a)		100	110,0-130,0		
					1300	4,1 mm RW Streug. max.4 (6)	)	

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

En H4

H4

Specifications
ction Pumps ②
rnors

40

WPP 001/4MB 12,8 e

6. Edition

En

PE 8 P 100 A 320 LS 810 RQ 300/1150 PA 187 R (1)
RQV300-1150 PA 227 R (2)
RQV350-1250 PA 251 R (3)

supersedes 0.82
company: Daimler-Benz
engine OM 402
(3) 188 kW (256 PS)

1-8-7-2-6-3-5-4 je 45° ± 0,5° (±0,75°)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC) Zy 1. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3 (1 u. 2)	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3 (3)	Spring pre-tensioning (torque-control valve) mm 6
1150	10,3+0,1	10,0-10,2	0,3(0,6)	11,0+0,1	10,1-10,3	n = 1230
300	7,5-7,7	1,4-2,2	0,3(0,5)	7,8-8,0	1,5-2,1	n = 350

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

RQ..PA 187 R(1)

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,8-14,6	650	14,2	9,3 4,0 1400	1195-1210 1235-1265 0 - 1,0	300	7,5	100 300 405-445	min.9,2 7,5-7,7 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = – mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/–1000 strokes 2	rev/min 3	rev/min 4	cm³/–1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1150	100,0-102,0 (98,0-104,0)	500	600	77,5-82,5 (75,5-84,5)	100	110,0-130,0

Checking values in brackets

7.83

H5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

H5

B. Governor Settings

RQV..227 R (2)

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2)	Upper rated speed: Control rod travel mm rev/min (1a, 2a) (3)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min (5)	Intermediate rated speed: Control rod travel mm (6)	Lower rated speed: Degree of deflection of control lever (7)	Lower rated speed: rev/min (8)	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min (10)	Sliding sleeve travel (1): mm (11)
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min.9,0	300	0,4-1,5
							300	7,4-7,6	500	2,6-3,2
ca.62	9,3	1190-1200				360-390			1000	5,7-6,1
	4,0	1260-1290							1250	8,2
	1350	0 - 1,0				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp 40°C (104°F) (2): rev/min (1)	Full-load delivery: cm³/1000 strokes (2)	Rotational-speed limitation, intermediate speed (2b, 4a): rev/min (3)	Fuel delivery characteristics, high idle speed (5a, 5b): rev/min (4)	Fuel delivery characteristics, high idle speed: cm³/1000 strokes (5)	Starting fuel delivery, Idle switching point (6): rev/min (6)	Starting fuel delivery, Idle switching point: cm³/1000 strokes (7)	Torque-control travel (5): rev/min (8)	Torque-control travel (5): Control rod travel mm (9)
1150	102,0-104,0 (100,0-106,0)	1190-1200*	600	82,0-87,0 (80,0-89,0)	100	110,0-130,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

RQV..PA 251 R (3)

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2)	Upper rated speed: Control rod travel mm rev/min (1a, 2a) (3)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min (5)	Intermediate rated speed: Control rod travel mm (6)	Lower rated speed: Degree of deflection of control lever (7)	Lower rated speed: rev/min (8)	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min (10)	Sliding sleeve travel (1): mm (11)
max.	1250	15,2-17,8	-	-	-	ca.20	100	min.8,5	1285	8,3
							350	6,9-7,1		
ca.66	9,9	1280-1290					710-770 = 2,0			
	4,7	1350-1380				(3a)				
	1500	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp 40°C (104°F) (2): rev/min (1)	Full-load delivery: cm³/1000 strokes (2)	Rotational-speed limitation, intermediate speed (2b, 4a): rev/min (3)	Fuel delivery characteristics, high idle speed (5a, 5b): rev/min (4)	Fuel delivery characteristics, high idle speed: cm³/1000 strokes (5)	Starting fuel delivery, Idle switching point (6): rev/min (6)	Starting fuel delivery, Idle switching point: (7)	Torque-control travel (5): rev/min (8)	Torque-control travel (5): Control rod travel mm (9)
1230	101,0-103,0 (99,0-105,0)	1280-1290*	1230	78,0-80,0 (76,0-82,0) **	100	110-130,0	-	-
					350	16,0-22,0 Change-over point 100-270 (80-290)		

** Adjusted at the inner lever of the reduced-delivery stop

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 12,8 g

2. Edition

En

Testoil-ISO 4113

PE 8 P 100 A 320 LS 810 RQ 750 PA 374 R
RQ 900 PA 310 R

supersedes 1.78
company: Daimler-Benz
engine: OM 402
138 kW (187PS)
108 kW (147PS)

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1
0 - 45-90-135-180-225-270-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3.40-3.50 (3.35-3.55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery m. PA374 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery m. PA310 cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,0+0,1	9,6 - 9,8	0,3 (0,6)	11,0	9,7 - 9,9	n = 850
				+0,1		
350	7,8-8,0	1,7 - 2,3	0,3 (0,7)	7,4-7,6	1,7 - 2,3	n = 300

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ.. PA374R

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑦a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca.24	10,0 4,6 850	750-755 780-790 0 - 1	-	-	-	- ③a	-	-	750 -	3,8 -

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ⑦b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
700	96,0 - 98,0 (94,0 - 100,0)	750-755 *			100	130,0-150,0 (126,0-154,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

./.

7.83

H7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

H7

PA310R

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.36	10,0 4,3 1050	905-910 935-945 0 - 1		-	-	-		- (3a)	-	-		900 -	5,6 -
- -													

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
850	97,0 - 99,0 (95,0 - 101,0)	905-910*			100	110 - 130 Increase up to 4.2-4.4 mm control-rod travel Max. dispersion 4 (6)		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

H8

En 118

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 12,8 n
3. Edition
En

Testoil-ISO 4113

PE 8 P 100 A 320 LS 819 RSV 350-1250 PO/822

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 je 45° ± 0,5° (± 0,75°)

Komb.-Nr. 0 401 878 107

supersedes 8.81
company Daimler-Benz
engine OM 402
165 kW (224 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 - 3,5 (3,35-3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	9,6-9,7	8,7 - 8,9	0,3(0,6			
350	7,5-7,7	2,1 - 2,5	0,3(0,5			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.31	350	7,6	1230	9,6+0,1
	x = 4,5						**		1050	9,9+0,2
(5) ca.58	8,6	1270-1280					450-510	= 2,0	850	10,3+0,2
	4,0	1330-1345								
	1400	0,3 - 1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1230	87,0-89,0 (85,0-91,0)	1270-1280*	800	84,0-88,0 (82,0-90,0)	100	110 - 130 (	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 16,0 g
3. Edition
En

Testoil-ISO 4113

PE 10 P 100 A 320 LS 821 RQV 350-1250 PA 378R (1)
RQV 350-1000 PA 384R (2)

supersedes 81
company Daimler-Benz
engine OM 403
(1 - 311 PS)
(2 - 270 PS)

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2
0 -45 -72 -117-144-189-216-261-288-333° ±0,50(0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,8+0,1	9,9 - 10,1	0,3(0,6)	10,5 (+0,1)	9,1 - 9,3	n 980
350	7,8-8,0	1,4 - 2,0	0,3(0,5)	7,4-7,6	1,4 - 2,0	

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQV ..378 R (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca.14	100	min.9,4	300	0,2-0,8
							350	7,8-7,9	1275	8,3
ca. 66	9,8	1290-1300								
	4,0	1360-1390								
	1500	0 - 1,0				(3a) 420-540				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1230	99,0-101,0 (97,0-103,0)	12 0-1300*	1230	75,0-77,0** (73,0-79,0)	100	120-140 (116-144)	-	-
						100-270 (80-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set at the reduced-delivery stop.

7.83

H10

H10

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1000	15,2-17,8		-	-	-	ca.20	100	min.8,5	300	0,4-1,4
								350	6,8-7,0	1025	8,3
								660-720	=2,0		
								900	0 - 1		
ca.64	9,5	1025-1040								-	-
	1250	1110-1140									
		0 - 1,0					(3a) 350-430				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation (2b) intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
980	91,0 - 93,0 (89,0 - 95,0)	1025-1040*			100	120 - 140		
					350	14,0 - 20,0		
			1125	3,4-3,6mmRW				
			Streug.max.4,0(6,0)		100-270 (80-290)			

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation (2b) intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 19,1 d 1

1. Edition En

PE 12 P 110 A 320 LS 830 Z RQ 750 PA 374 R

Komb.-Nr. 0 401 840 051

1 - 5- 9 -8- 3 - 4 - 11- 10 - 2 - 6 -7 - 12

0 -15-60-75-120-135-180-195-240-255-300-315° ±0,5°(±0,75°)

supersedes ..

company: Daimler-Benz

engine OM 404 A
312 kW (424 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,5 (3,15-3,35) mm (from BDC) Zyl. 12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,0+0,1	15,6-15,8	0,4(0,8)			
300	7,7-7,9	1,3-1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	13,0 5,4 850	750-755 785-795 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750-755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	156,0-158,0 (153,0-161,0)	-	-	-	100	145,0-165,0

Checking values in brackets

7.83

H12

H12

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 m1
3. Edition

En

PE 12 P 110 A 320 LS 832 RQV350-1150 PA 493 R

supersedes 12.82

Komb.-Nr. 0 401 840 067

compare Daimler-Benz OM 404 A

engine: 386 kW (525 PS)

1 - 5-9- 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0 -15-60-75-120-135-180-195-240-255-300-315° ±0,5°(±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,4 (3,15-3,35) Zyl.12; RW = 9,0-12,0 mm mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	13,1+0,1	14,0-14,2	0,4 (0,8)			
350	7,5-7,7	1,8- 2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.18 (3a)	100	min.8,6	300	1,4-1,6
ca.66	12,1 4,0 1450	1185-1195 1295-1325 0 - 1,0					350 690-750	7,0-7,2 = 2,0	600 850 1150	3,6-3,9 5,1-5,4 7,9

Torque control travel s = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1130	0,7 bar 140,0-142,0 (137,0-145,0)	1185-1195*	LDA 500	0 bar 121,0-123,0 (118,0-126,0)	100	130,0-150,0 (126,0-154,0)	-	-
			LDA 1130 **	0,7 bar 99,0-103,0 (96,0-106,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

H13

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

H13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

MB 19,1 m 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 12 P.. LS 832 + .. PA 493 R	0,7	0 0,4 0,33	13,1-13,2 12,3-12,4 12,9-13,0 12,5-12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

** Adjusted at the inner lever of the reduced-delivery stop

H14

Ed H14

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 20,9 e
En 3. Edition

Testoil-ISO 4113

PE 12 P 110 A 520 LS838 RQ 750 PA392R (1)
RQ 900 PA404R (2)

supersedes 2.81
company: MAN
engine.
(1) Nr. 7020 (283kW) 385 PS
(2) Nr. 7060 (335kW) 455 PS

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7
0 - 45- 60-105-120-165-180-225 - 240-285-300-345° ±0,5°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) / 3,00-3,10 mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery m. 392R (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery m. 404R (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3-11,4	14,7 - 14,9	0,4(0,8)	11,4-11,5	15,4 - 15,6	n = 850
250	7,4-7,6	1,1 - 1,7	0,4(0,7)	3,8-4,0	1,4 - 2,0	n = 250

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ.. 392R (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 30	10,3	750-755							750	5,3
	7,2	770-780								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	147,0-149,0 (139,0-152,0)	750-755*			775	7,2 mm RW Streug.max.6(9)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

H15

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH. D-7 Stuttgart 1. Postfach 50. Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

H15

B. Governor Settings

RQ..404R (2)

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
-	10,4	900-905		-	-	-	-	-	-		
	5,0	931-941									
	1000	0 - 1,0					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
850	154,0-156,0 (151,0-159,0)	900-905*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

H16

En H16

Test Specifications Fuel Injection Pumps and Governors

(1) 001/4 Vol 10,0 b 4

2. Edition En

Testoil-ISO 4113

PE 6 P 100A320 RS 100 W RQV 250-1100 PA 232/2R (1)
RS 100 X RQV 250-1100 PA 232/2R (2)

superseded 10.80
company Volvo
engine: TD 100 A

Port-closing test with/without ROBO diagram
Special instructions on the reverse side.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,55-2,75) 2,60-2,70 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,7 - 13,4	0,5			2,5 ±0,1** (max.2,2-2,9)
600	9	6,1 - 7,3				
	12	11,3 - 12,7				
	15	16,5 - 18,2				
200	9	4,2 - 5,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly

B. Governor Settings

RQV... 232/2 R

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8				ca.12	100	min. 7,6		
							250	5,9-6,1		
							320-380	=2,0		
ca. 47	12,0	1140-1150								
	4,0	1230-1260								
	1350	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
(1) LDA 700	0,6 bar 145,0-148,0 (143,0-150,0)	1140-1150*	(1) LDA 700	0 bar 114,0-119,0 (112,0-121,0)	100	240		
					250	11 - 15		
					Dispersion max.2,5			
(2) LDA 700	0,4 bar 153,0-156,0 (151,0-158,0)		(2) LDA 700	0 bar 115,0-118,0 (113,0-120,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

H17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

H17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
100 W + 232/2R	0,32 - 0,36	0,12 - 0,18	
100 X + 232/2R	0,38 - 0,41	0,16 - 0,22	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

H18

n H18

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MB 10,6a
3. Edition
En

Testoil-ISO 4113

PE 6 P 100 A 320 LS 841 RSV 650-1150 P. 1/820 R
Komb.-Nr. 0 401 876 243

supersede 31.80
company Daimler-Benz
engine OM 401
150 kW (204 PS)

6 - 3 - 5 - 2 - 4 - 1
0 -45 -120-165-240-285° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,25) 3,20-3,30 mm (from BDC) Zyl. 6; RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,7+0,1	11,9 - 12,1	0,3(0,6)			
650	6,1-6,3	0,8 - 1,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

** Set auxiliary idle spring at 2.0 mm control-rod travel.

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 X = 4,0					ca.32	650	6,2 **	1130	12,7-12,8
							660-715 = 2,0		600	12,7-12,9
ca.58 (2a)	1160-1170 =11,7 1195-1210 = 5,1 1350= 0,3 - 1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	119,0 - 121,0 (117,0 - 123,0)	1160-1170*	-	-	100	110 - 130	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.83

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

H19

1

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MAC 11,0 k

1. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 720 RS3024 RQV 300/600-1050 PA342KR
PA344KR
PES 6 P 110 A720/3RS3036 RQV 300/600-1050 PA365KR
PA366KR

PLE-Maß = 0,740"-0,820"

supersedes –
company Mack
engine ETA 676 B (306 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,3+0,1	22,1-22,3	0,4			
300	5,0-5,2	1,2-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1070	15,5-18,0	-	-	-	ca.19	250	9,8-11,3	300	0,6-1,8
	1150	6,0-11,0					300	7,5- 8,5	400	-600 =
	1200	0 - 6,8					400	2,5- 5,0		3,1-3,6
	1280	0					580	2,5- 5,0	900	5,8-6,2
							700	0,8- 2,0	1070	8,2
						(3a)	830	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	1,7 bar		LDA	1,7 bar			1050	14,4
1000	221,0-223,0	1090-1100*	800	223,5-226,5	100	ca.11,5mmRW	900	14,4
			500	235,5-238,5	300	ca. 5 mmRW	700	14,7
			LDA	0 bar	dispersion max. 4		600	15,2
			600	143,0-146,0			500	14,9
			300	114 -122 (PLE)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min ~~decreasing~~ increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
S 3024 mit 342KR und 344KR S 3036 mit 365KR und 366KR	0,4	1,08-1,09	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

H21

H21

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 Vol.12,0c

6. Ausgabe

En

Testoil-ISO 4113

PE 6 P 120 A 320 RS 3032 RQV 250-1100PA355/2R
RS 3032Y 250-1100

supersedes 11.79
company: Volvo
engine: TD 120 C

Testing with T nozzles and fuel lines 8 x 2 x 1000 according to ..W 400/305

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,60-2,70 (2,55-2,75) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 3032 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 3032Y cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0-12,1	21,8 - 22,1	0,4(0,8)	11,4-11,5	20,1 - 20,4	2,5+ 0,1**
250	5,3-5,5	0,9 - 1,3	0,3(0,6)	5,3-5,5	0,9 - 1,3	(max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.10	100	mind.6,9	350	1,4-2,0
							250	5,3-5,5	650	3,7-4,0
ca. 45	11,0	1140-1150					300-360=2,0		1170	8,3
	4,0	1225-1255								
	1320	0 - 1,0				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0 bar			-	-
700	218,0-221,0 (215,0-224,0)	1140-1150*	700	148,0-152,0 (145,0-155,0)	100	410,0-460,0		
					250	9 - 13 **		
"Y"					Dispersion max.3(6)			
700	201,0-204,0 (198,0-207,0)	1140-1150*	700	148,0-152,0 (145,0-155,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

H22

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

H22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing (XXXXXXX) pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
3032 + 355/2R	0,90	0,55 0,14 0	12,0 - 12,1 11,4 - 11,5 9,2 - 9,4 9,1 - 9,2
3032 Y + 355/2R	0,49	0,14	11,1 - 11,2 9,2 - 9,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 12,0 g 2

1. Edition

En

PE 6 P 120 A 320 RS 3075 RSV 650-750 P 4/421

supersedes -

company Volvo

engine TID 120 FG

Komb.-Nr. 0 401 876 718

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	24,4-24,6	0,5(0,9)			2,5±0,1
650	4,0-4,2	2,2-2,6	0,5(0,7)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca.33	675	6,1	-	-
	x =	2,25					675	6,0-6,2		
ca.37 (2a)	10,8	750-755					660-700	= 2,0		
	4,0	775-785								
	925	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiting Note changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	244,0-246,0 (241,0-249,0)	750-755*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

H24

H24

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SAU 12,0 d
2. Edition

En

PES 6 P 120 A 420 LS 3049 RQ 300/1000 PA 423 DR

1 - 4 - 2 - 6 - 3 - 5 je 60° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 10.80
company: Saurer
engine. D 4 KT
225 kW

Komb.-Nr. 0 402 046 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,5 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,7+0,1	20,0-20,4	0,5(0,8)			
300	4,4-4,6	1,9-2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check (1) Control rod travel		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	9,7 4,0 1200	1045-1060 1090-1120 0-1,0	300	4,5	100 300 400-440	min.5,9 4,4-4,6 =2,0	1000 700 800 900	10,7-10,8 11,8-11,9 11,6-11,8 11,0-11,3

Torque-control travel on flyweight assembly dimension a = 0,7 mm

Speed regulation: At 1045-1060 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1000	1,2 bar 200,0-204,0 (197,0-207,0)	-	LDA 700 LDA 400	1,2 bar 215,0-219,0 (212,0-222,0) 0 bar 102,0-106,0 (99,0-109,0)	100	215,0-235,0 =13,5-13,7 mm RW

Checking values in brackets

7.83

J1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 P..LS3049 +RQ..PA 423 DR	1,2	0 0,45 0,25	11,8-11,9 8,4- 8,5 10,9-11,0 9,2- 9,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J2

Test Specifications Fuel Injection Pumps and Governors

KPP 001/4 VOL 12,0 d 2

2. Edition En

PE 6 P 120 A 320 RS 3050 RQV 250-1025 PA 611
Komb.-Nr. 0 401 846 751

supersedes 82
company Volvo
engine: TD 120 FC

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4 - 2,5 (2,35-2,55) mm (from BDC) bei RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	23,7 - 24,0	0,5(0,9)			2,5 ± 0,1 (2,2 - 2,9)
250	3,8-4,0	2,2 - 2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	ca. 8	100	min.5,3	200	0,6-0,9
							250	3,8-4,0	475	3,9-4,5
ca.64	12,0	1085-1095					300-360 = 2,0		670-940	6,4-6,6
	4,0	1150-1180							1025	7,5
	1300	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 237,5-239,5 (234,5-242,5)	1085-1095*	LDA 700	0 bar 142,0-144,0 (139,0-147,0)	100	20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

J3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

J3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PESP..RS 3050		1,20	13,0 - 13,1
with..PA 611			9,2 - 9,3
	0,67		12,2 - 12,3
		0,3	10,5 - 10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 i
3. Edition

En

PE 6 P 120 A 720 RS 3069 RQV 300-1000 PA 501
Komb.-Nr. 0 401 846 728

supersedes 3.82
company: Fiat
engine: 8210.22.269

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	19,6-19,9	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1045	15,2-17,8	-	-	-	ca.10	100	min.7,6	250	0,2-0,5
ca.65	11,3	1040-1050					300	6,0-6,2	500	2,9-3,5
	4,0	1115-1145							750	5,1-5,4
	1250	0-1,0				350-455			1000	7,6
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 196,0-199,0 (193,0-202,0)	1040 - 1050*	LDA 1000	0 bar 146,0-149,0 (143,0-152,0)	100	175,0-195,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

J5

J5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3069 + RQV..PA 501	0,42	0,70 0 0,35	11,5-11,6 12,3-12,4 9,4-9,5 10,1-10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PE 6 P 120 A 720 RS 3069 RQ 300/1000 PA 502

supersedes 3.82
company: Fiat
engine: 8210.22.373

Komb.-Nr. 0 401 846 729
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	19,6-19,9	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650 VH=	19,2-20,8 max. 46°	650	20,0	11,3 4,0 1250	1045-1060 1130-1160 0 - 1,0	300	6,1	100 300 365-405	min.7,6 6,0-6,2 =2,0	1000 600	12,0-12,1 12,0-12,2

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1045-1060 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1000	0,7 bar 196,0-199,0 (193,0-202,0)	-	LDA 1000	0 bar 146,0-149,0 (143,0-152,0)	100	175,0-195,0

Checking values in brackets

7.83

J7

J7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P .. RS 3069 +RQ..PA 502	0,42	0,70 0 0,35	11,5-11,6 12,3-12,4 9,4- 9,5 10,1-10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J8

Ed J8

Test Specifications Fuel Injection Pumps and Governors ①

WPP 001/4 RVI 12,0 a
5. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 320 RS 3070 RQV 250-1100 PA 495
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 1.83
company: RVI
engine: MIDR 063540
223 kW (304 PS)
Komb.-Nr. 0 402 046 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,45-3,65) 3,50-3,60 mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,9-13,0	19,4 - 19,7	0,5(0,8)			
250	5,2-5,4	1,5 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].
Mark for start of pump delivery on tester body 12° after start of pump delivery, cylinder No. 1 = 9,0 - 12,0 mm.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100 1400	15,2-17,8 0 - 1	-	-	-	ca.12	100 250	min.6,8 5,2-5,4	200 500 850 1150	0,3-0,6 3,0-3,2 5,0-5,2 8,4
ca. 66	11,9 4,0	1160-1170 1235-1265				290-400 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 194,0-197,0 (191,0-200,0)	1160-1170	LDA 1100	0 bar 151,0-154,0 (148,0-157,0)	100	130,0-165,0 100-170 (80-190)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.83

J9

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..RS 3070 + RQV..PA 495	0,27		12,2 - 12,3
		0,70	12,9 - 13,0
		0	10,6 - 10,7
		0,22	11,2 - 11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 12,0 f
2. Edition

En

PE 6 P 120 A 320 RS 3071 RQV 250-1100 PA 371/2 R

supersedes 8.80
compan Volvo
engine TD 120 G

Komb.-Nr. 0 401 846 725

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	1,4+0,1	20,5-20,8	0,5(0,9)			2,5+0,1 (2,2-2,9) **
250	5,6-5,7	2,2-2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 12	100	min.7,1	200	0,7-0,9
							250	5,6-5,7	500	2,9-3,2
ca. 46	10,4	1160-1170							800	5,0-5,3
	4,0	1235-1265							1100	7,7
	1350	0 - 1,0				275-400 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 205,0-208,0 (202,0-211,0)	1160-1170 *	LDA 700	0 bar 157,0-161,0 (154,0-164,0)	100	230,0-270,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

J11

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
© by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach Printed in the Federal Republic of Germany.
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

J11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 3071 +RQV..PA371/2R	0,57	0,90 0 0,33	11,0-11,1 11,4-11,5 9,0-9,1 9,9-10,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 VOL 12,0 g 1
1. Edition
En

PE 6 P 120 A 320 RS 3075 RSV 200-1000 P 4/421

Komb.-Nr. 0 401 876 730

supersedes -
company Volvo
engine TID 120 F/PP

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	23,6-23,9	0,5(0,9)			2,5±0,1 (2,2-2,9)
200	5,9-6,1	2,3-2,9	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca.20	200	5,5	-	-
	x = 4,0						200	5,9-6,1		
ca.58 (2a)	10,3	1040-1050					2 65-325	= 2,0		
	4,0	1065-1095								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	235,5-238,5 (2 32,5-241,5)	1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 i 3
2. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3077 RQ 300/1100 PA 603

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 8.81
company Daimler-Benz
engine OM 407 HA
206 kW (280 PS)
Komb.-Nr. 0 402 046 727

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	18,4 - 18,6	0,5(0,9)			
300	5,0-5,2	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	Torque control rev/min 11	Control rod travel mm 12
650	19,1-20,8	650	20,0	10,7	1145-1160	300	5,1	100	min. 6,5	1100	11,7 + 0,1
VH =	max. 46°			4,0	1190-1220			300	5,0 - 5,2	950	12,0 + 0,2
				1260	0 - 1			355-395	=2,0	600	12,3 + 0,1

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At 1145 - 1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop rev/min 3	Fuel delivery characteristics rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery rev/min 6	cm³/100 strokes 7
LDA	0,75 bar		LDA	0,75 bar	100	175,0 - 195,0
1100	184,0 - 186,0		600	187,0 - 193,0		(171,0-199,0)
	(181,0 - 189,0)			(184,0 -196 ,0)		
			LDA	0 bar		
			500	145,0 - 147,0		
				(142,0 - 150,0)		

Checking values in brackets

7.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrustung.

J14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
..LS 3077 with	0,75		12,3 - 12,4
..PA 603		0,53	11,7 - 11,8
		0,42	10,8 - 11,0
		0	10,3 - 10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 ROL 12,2 a
3. Edition
En

Testoil-ISO 4113

PE 6 P 130 A 320 RS 3078 RQ 750 PA 584
1 - 4 - 2 - 6 - 3 - 5 je 60° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 8.81
company Rolls Royce
engine C 6 . 200 G
Komb.-Nr. 0 401 846 744

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7+0,1	26,7 - 27,1	0,5(0,9)			
300	4,9-5,0	3,8 - 4,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,7 4,0 850	750-755 772-780 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
700	267,0 - 271,0 (264,0 - 274,0)	-	-	-	100	290,0-340,0

Checking values in brackets

8.83

J16

J16

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 9,6 b
2. Edition
En

Testoil-ISO 4113

PES 6 P 110 A 720 RS 3079 RSV 300-1150 P 8/486
A 486

superseded 9.82
company KHD
engine F 6 L 413 FRC
199 kW (271 PS)
bei 2300 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	14,2+0,1	17,7 - 18,1	0,4 (0,8)			
300	7,2-7,3	1,3 - 1,9	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 13	300	6,7	1150	14,2+0,1
	X =	2,75							350	15,4+0,6
							300	7,2-7,3	550	14,2+0,1
ca. 48 (5)	13,2	1190-1200					300-360 = 2,0			
	4,0	1220-1250								
	1390	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to . . rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1150	0,9 bar 177,0-181,0 (174,0-184,0)	1190-1200*	LDA 800	0,9 bar 175,0-179,0 (172,0-182,0)	100	190,0-210,0		
			LDA 500	0 bar 123,0-125,0 (120,0-128,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

J17

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..RS3079 mit .. P8/486 A 486	0,9		14,2 - 14,3
		0	11,9 - 12,0
		0,57	13,8 - 13,9
		0,30	12,4 - 12,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J18

J18

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 RVI 12,0 b
2. Edition

En

8.81

Testoil-ISO 4113

PES 6 P 120 A 320 RS 3082 RQ 750 PA 597
Komb.-Nr. 0 402 046 723

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes RVI
company MIDS (R) 063540
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 - 3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,8+0,1	25,1 - 25,3	0,5(0,9)			
250	6,5-6,7	1,50 - 2,10	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	13,8 4,0 900	750-755 787-800 0 - 1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
700	251,0 - 253,0 (248,0 - 256,0)	-	-	-	-	-

Checking values in brackets

8.83

J19

J19

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 12,0 d
2. Edition

En

supersedes 12.82

PE 6 P 120 A 320 RS 3088 Z RSV 200-900 P4/421 R

company Volvo-Penta

engine TMD 120 B
Komb.-Nr. 0 401 876 725

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 - 2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7+0,1	19,3-19,7	0,5 (0,9)			2,5+0,1 (2,2-2,9)
250	3,6-3,8	1,6-2,0	0,5 (0,8)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca.22	250	3,2	-	-
	X = 4,0						250	3,6-3,8		
ca.53	10,7	940- 950					300-360	= 2,0		
(2a)	4,0	970-1000								
	1130	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	193,0-197,0 (191,0-199,0)	940-950*	900	193,0- 197,0 (190,0-200,0)	100	390-440 = 20,0-21,0 mmRW	250	3,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

J20

J20

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 31,8 a
1. Edition
En

PE 12 P 130 A 120 RS 3094-1 RQV 400-750 PA 632
1 - 12- 9 - 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0 - 45- 60-105-120-165-180-225-240-285-300-345° ±0,5°(±0,75°)

supersedes
company: Baudouin
engine: V 12 P 15 SRCN
Komb.-Nr. 0 401 830 704

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	30,6-31,0	0,5(0,9)			
400	3,5-3,7	2,1-2,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel (1a) mm rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca. 24	10,4 4,0 900	750-755 780-790 0 -1,0	-	-	-	ca. 6 (3a)	100 400	min.5,1 3,5-3,7 690-750= 2,0	375 450-650 750	0,5-0,7 2,0-2,1 4,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
700	306,0-310,0 (303,0-313,0)	750-755*	-	-	- 400	- 21,0-27,0 (18,0-30,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

J21

J21

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 M8 11,4 o
3. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3095 RSV 350-750 P1/487

supersedes 14.82

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

company Daimler-Benz
engine OM 407 A
169 kW (230 PS)
Komb.-Nr. 0 402 076 717

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 6; RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	12,4+0,1	19,6 - 19,8	0,5(0,8)			
350	5,7-5,9	3,0 - 4,0	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	700	0,3-1,0	-	-	-	-	-	-	-	-
	x =	2,25								
ca. 33 (5)	11,4	750-755								
	4,0	785-795								
	900	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
730	196,0-198,0 (193,0-201,0)	745-760 *	-	-	100	170,0-190,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 STE 9,7 a
2. Edition

En

PE 6 P 110 A 721 RS 3102 RQV 250-1200 PA 257-1
Komb.-Nr. 0 401 856 702

supersedes 1.82
company: Steyr
engine: WD 615.84
180 kW (245 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	15,1-15,3	0,4(0,8)			
250	7,0-7,2	1,3-1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca.14	100	min. 8,5	200	0,7-0,9
							250	7,0-7,2	530	3,7-3,9
ca. 48	11,6	1240-1250					350-410	= 2,0	870	5,3-5,7
	4,0	1310-1340							1200	8,1
	1450	0 - 1,0				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 151,0-153,0 (148,0-156,0)	1240-1250 *	LDA 700	0,7 bar 147,0-151,0 (144,0-154,0)	100	210,0-240,0	-	-
			LDA 700	0 bar 99,0-103,0 (96,0-106,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.83

J23

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

J23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3102 + RQV..PA257-1	0,70	0 0,46 0,33	12,6-12,7 10,2-10,3 12,0-12,1 10,8-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 SSC 14,0 a
2. Edition
En

PE 12 P 100 A 520 RS 3103 RQV 375-1000 PA 639
Komb.-Nr. 0 401 840 708

supersedes 11.82
company: SSCM
engine: Poyaud V 12-520 AN
219 kW (298 PS)

1- 8- 5-10- 3 - 7- 6 - 11- 2 - 9 - 4 - 12

0-15-60-75-120-135-180-195-240-255-300-315 ° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5+0,1	9,3-9,5	0,3(0,6)			
375	7,6-7,8	0,8-1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca.17	100	min. 9,2	350	0,8-1,1
							375	7,6-7,8	570	3,5-3,8
ca. 63	10,5	1040-1050							780	5,0-5,4
	4,0	1085-1115							1000	7,6
	1250	0 - 1,0								
						375-475 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	93,0-95,0 (91,0-97,0)	1040-1050*	-	-	100	230,0-250,0 (226,0-254,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

KH

KA

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 UNI 9,6 a 1
2. Edition
En

PES6P 110 A 320 RS 3105-1
Komb.-Nr. 0 402 046 737

RQ 275/1150 PA 653

supersedes 11.82
company: IVECO-Unic
engine: 8220-32
129 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,5+0,1	12,2-12,5	0,4(0,75			
275	5,9-6,1	1,5-2,0	0,45(0,75			

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600 VH=	19,2-20,8 max. 46°	600	20,0	10,5 4,0 1400	1195-1210 1245-1275 0 - 1,0	275	6,0	100 275 350-390	min.7,5 5,9-6,1 = 2,0	1150 600	11,5-11,6 11,5-11,7

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: AI 1195-1210 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 8	Control rod travel mm cm³/1000 strokes 7
LDA 1150	0,7 bar 122,0-125,0 (119,5-127,5)	-	LDA 400	0 bar 68,0-71,0 (65,0-74,0)	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

9.83

K2

H2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..RS 3105-1 + RQ..PA 653	0,70	0 0,27 0,22	11,5-11,6 9,4- 9,5 11,0-11,1 9,7-10,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K3

En K3

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 10,0 e

2. Edition

En

supersedes 11.82

company Volvo-Penta

engine TMD 100 B
177 kW (241 PS)

PE 6 P 110 A 320 RS 3109 Z RSV 200-900 P 1/421

Komb.-Nr. 0 401 876 729

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,6+0,1	14,9-15,1	0,4 (0,8)			
250	4,2-4,4	1,7-2,1	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x = 4,0	0,3-1,0	-	-	-	ca. 19	250	3,7-3,9	-	-
							250	4,2-4,4		
ca. 46 (2a)	10,6	940-950					270-330=2,0			
	4,0	970-1000								
	1140	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note. changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	149,0-151,0 (146,0-154,0)	940-950	-	-	100	20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.83

K4

K4

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MB 11,4 q
2. Edition
En

PES 6 P 120 A 820 LS 3112 RSV 350-1 100 PQ/500

supersedes 1.83
company Daimler-Benz
engine OM 407 A
296 kW (280 PS)
Komb.-Nr. 0 402 076 718

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5+0,1	17,5-17,7	0,5 (0,9)			
350	4,7-4,9	1,6-2,2	0,8 (1,2)			
600	-					
500	-	C. Sp. 4 u. 5	0,75(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	350	4,8		
	x = 3,25						420-460	= 2,0		
ca. 48 (2a)	10,5	1135-1145								
	4,0	1215-1245								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1135-1145*	LDA	0,7 bar	100	150,0-170,0		
1100	175,0-177,0		600	177,0-183,0		(146,0-174,0)		
	(172,0-180,0)			(174,0-186,0)				
			LDA	0 bar				
			500	143,0-145,0				
				(140,0-148,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.83

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

K5

K 5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

MB 11,4 q

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..LS3112 + RSV..P0/500	0,70		11,8 - 11,9
		0,40	10,7 - 10,9
		0,50	11,6 - 11,7
		0	10,5 - 10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K6

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 STE 12,0 b
2. Edition
En

PE 8 P 110 A 121 LS 3113 RQ 300-1100 PA 646
Komb.-Nr. 0 401 858 700
1-5-4-8-6-3-7-2 je 45° ± 0,5° (± 0,75°)

supersedes 11.82
company: STEYR
engine: WD815.64
240 kW (326 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0±0,1	15,8-16,0	0,4(0,8)			
300	6,1-6,3	1,5-2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation: Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,0 4,0 1400	1135-1150 1200-1230 0 - 1,0	300	6,2	100 300 400	min.7,7 6,1-6,3 460=2,0	-	-

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation. At 1135-1150 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 1100	0,9 bar 158,0-160,0 (155,0-163,0)	-	LDA 500	0 bar 111,0-113,0 (108,0-116,0)	100	240,0-280,0

Checking values in brackets

9.83

K7

K7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE8P..LS3113	0,55		11,5-11,7
		0,90	12,0-12,1
+..PA646		0	9,7- 9,8
		0,48	10,9-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K8

En K8

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 STE 12,0 b 1
2.Edition

En

PE 8 P 110 A 121 LS 3113 RQV 250-1100 PA 652
Komb.-Nr. 0 401 858 701
1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je 45° ± 0,5° (± 0,75°)

supersedes 3.83
company Steyr
engine WD 815.64
240 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	15,8-16,0	0,4(0,75)			
250	6,1-6,3	1,5-2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min.7,3	200	0,7-0,9
ca.61	11,0	1140-1150					250	6,1-6,3	500	3,7-4,1
	4,0	1195-1225					415-475 = 2,0		800	5,4-5,7
	1350	0-1,0							1100	7,9
						(3a)				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9	
LDA 1100	0,9 bar 158,0-160,0 (155,0-163,0)	1140-1150*	LDA 500	0,9 bar 159,0-163,0 (157,0-165,0)	100	240,0-280,0	1100	12,0+0,1	1
							810	12,0+0,3	3
							640	12,2+0,2	2
							500	12,4+0,1	1
			LDA 500	0 bar 111,0-113,0 (108,0-116,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

K9

K5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3113 + RQV..PA 652	0,90		12,4 - 12,5
		0	9,7 - 9,8
		0,60	11,8 - 12,0
		0,48	10,8 - 11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PE 8 P 120 A 920/5 LS 3801 RQ 300/1200 PA 356 R

supersedes –

company: Fiat

engine: 8280.02.405 257 kW (350 PS)

Kob.-Nr. 0 401 848 711
0 401 848 703

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° ± 0,5° (± 0,75°)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 -3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,3-9,4	17,3 - 17,7	0,5 (0,9)			
300	6,7-6,9	2,8 - 3,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④ Control rod travel		Idle speed regulation Setting point		Test specifications ⑤ Control rod travel		Torque control ③ Control rod travel	
rev/min 1	mm 2	rev/min 3	mm 4	mm 5	rev/min 6	rev/min 7	mm 8	rev/min 9	mm 10	rev/min 11	mm 12
650	15,6-16,4	650	16,0	8,3 4,0 1400	1245-1260 1280-1310 0-1,0	300	6,8	100 300 415-455	min. 8,3 6,7-6,9 = 2,0	1200 650	9,3-9,4 9,3-9,5

Torque-control travel on flyweight assembly dimension a = – mm

Speed regulation: At 1245-1260 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1200	173,0 - 177,0 (170,0 - 180,0)	–	–	–	100	19,5-21,0 mm RW

Checking values in brackets

9.83

K11

K11

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FIA 17,2a1
1.Edition
En

PE 8 P 120 A 920/5 LS 3801 RQV 300-1200 PA 357 P.
Komb.-Nr. 0 401 848 704
1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° ± 0,5° (±0,75°)

supersedes_
company: Fiat
engine: 8280
257 kW (350 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 -3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,3-9,4	17,3 - 17,7	0,5(0,8)			
300	6,7-6,9	2,8 - 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 8,3	250	0,9-1,1
ca. 63	8,3 4,0 1450	1240-1250 1310-1340 0-1,0				330-430 (3a)	300	6,7-6,9	570 880 1200	4,0-4,4 5,7-5,9 8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	173,0-177,0 (170,0-180,0)	1240-1250*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

K12

Test Specifications Fuel Injection Pumps and Governors

② WPP 001/4 FIA 17,2a2
1. Edition

En

PE8P120A920/5LS3801 RQ 300/1200 PA 474 R
Komb.-Nr. 0 401 848 713
1-8-4-3-6-5-7-2 je 45° ± 0,5° (± 0,75°)

supersedes –
company: Fiat
engine: 8280.22.001
331 kW (450 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 -3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,9+0,1	22,1-22,5	0,5(0,9)			
300	6,7-6,9	2,8-3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	9,9	1245-1260	300	6,8	100	min. 8,3	1200	10,9-11,0
VA=	max. 46°			4,0	1275-1310			300	6,7-6,9	650	10,9-11,1
				1400	0-1,0			390-420=2,0			

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1245-1260 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1200	221,0-225,0 (218,0-228,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

9.83

K13

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 14,0 e 40
5. Edition

En

PES P 110 A 320 LS 3802 — RQ 300/1150 PA 187-3
RQ 300/1150 PA 187-5

supersedes 7.81
company: Daimler-Benz
engine: OM 422
206 kW (280 PS)

Komb.-Nr. 0 401 848 708
1-8-7-2-6-3-5-4 je 45° ±0,5° (±0,75°)
See Service Information VDT-I-401/102
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) 4,0-4,1 mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	12,7-12,9	0,4(0,8)	12,3-0,	13,1-13,3	
300	8,0-8,1	1,5-2,1	0,4(0,7)	8,0-8,	1,5-2,1	
600	12,3+0,1	C, Sp. 4 u. 5	(0,9)	12,3+0,	C, Sp. 4 u.5	

*with return throttle

* without return throttle

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check (1) rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications (4) Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications (5) rev/min 9	Control rod travel mm 10	Torque control (3) rev/min 11	Control rod travel mm 12
650	13,0-14,0	650	13,5	11,3	1195-1210	300	8,1	100	min.10,2	-	-
				4,0	1235-1265			300	8,0-8,2		
				1350	0 - 1,0			420-460	= 2,0		
								550	max.1,8		
										-1	

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1195-1210 min. 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/-1000 strokes 2	Control rod stop (3a) rev/min 3	Fuel delivery characteristics (3b) rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed (6) rev/min 6	Control rod travel mm cm³/1000 strokes 7
1150 (1)	127,0-129,0 (124,0-132,0)	600	600	118,0-122,0 (115,0-125,0)	100	130,0-150,0

Checking values in brackets

9.83

K14

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

K14

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation				Idle speed regulation				Torque control (3)	
		Setting point		Test specifications (4)		Setting point		Test specifications (5)			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,0-14,0	650	13,5	11,3 4,0 1350	1195-1210 1235-1265 0-1,0	300	8,1	100 300 420-460 550	min. 10,2 8,0-8,2 =2,0 max. 1,8	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1150 (2)	131,0-133,0 (128,5-135,5)	600	600	112,0-116,0 (109,0-119,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation				Idle speed regulation				Torque control (3)	
		Setting point		Test specifications (4)		Setting point		Test specifications (5)			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

En Checking values in brackets

K15

K15

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MB 14,6 d
4. Edition
En

Testoil-ISO 4113

PE 8 P 110 A 320 LS 3802 RQ 300/1150 PA 187-4
Komb.-Nr. 0 401 848 714
8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 je 45° ±0,5° (±0,75°)

supersedes 5.81
company: Daimler-Benz
engine: OM 422
184 kW (250 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) / 4,00-4,10 mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,6+0,1	10,9 - 11,1	0,4(0,8)			
300	8,3-8,5	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	13,2-14,0	650	13,6	10,6	1190-1205	300	7,7	100	min. 9,3	-	-
				4,0	1235-1265			300	7,6-7,8		
1350	0-1							410-450	= 2,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1190-1205 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery ⑥ Idle speed rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
1150	109,0 - 111,0 (106,0 - 114,0)	600	600	94,0 - 98,0 (91,0 - 101,0)	100	130,0-150,0

Checking values in brackets

9.83

K16

K16

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 n 1
2. Edition
En

PE 8 P 110 A 320 LS 3802 RQ 900 PA 310 R
Komb.-Nr. 0 401 848 738
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° + 0,5° (+0,75°)

supersedes 7.81
company Daimler-Benz
engine OM 422
180 kW (245 PS)

See Service Information VDT-I-401/102

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 8; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,9+0,1	14,9-15,1	0,4(0,8)	13,9+0,1	15,2-15,4	
300	8,2-8,4	1,1-1,7	0,4(0,7)	8,2-8,4	1,4-2,0	

*with return throttle

* without return throttle

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,9 6,3	900-905 940-950	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
(1) 850	149,0-151,0 (146,0-154,0)	-	-	-	100	130,0-150,0

Checking values in brackets

9.83

K17

K17

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation				Idle speed regulation				Torque control (3)	
		Setting point		Test specifications (4)		Setting point		Test specifications (5)			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	12,9 6,3	900-905 940-950	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 900-905 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(2) 850	152,0-154,0 (149,0-157,0)	-	-	-	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check (1)		Full load speed regulation				Idle speed regulation				Torque control (3)	
		Setting point		Test specifications (4)		Setting point		Test specifications (5)			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

PE 8 P 110 A 320 LS 3802 RQ 1050 PA 310
Komb.-Nr. 0 401 848 739
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes 7.81
company: Daimler-Benz
engine: OM 422
198 kW (269 PS)

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test:ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Zyl. 8; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,3+0,1	15,9-16,1	0,4(0,8)	14,3+0,1	15,9-16,1	
300	8,2-8,4	1,4- 2,0	0,4(0,7)	8,2-8,4	1,4- 2,0	
		*with return throttle			* without return throttle	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	13,3	1050-1055	-	-	-	-	-	-
				4,0	1108-1118						

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 1050-1055 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
(1 u.2)		-	-	-	(1)	
1000	159,0-161,0 (156,0-164,0)				100	130,0-150,0
					(2)	
					100	140,0-160,0 (136,0-164,0)

Checking values in brackets

9.83

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 14,6n

3. Edizione

En

PE 8 P 110 A 320 LS 3802 RQ 750 PA 374 R
Komb.-Nr. 0 401 848 737
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes 11.82
company: Daimler-Benz
engine: OM 420
154 kW (209 PS)

See Service Information VDT-I-401/102

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Zyl. 8; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,9+0,1	14,2-14,4	0,4(0,8)	13,9+0,1	14,2-14,4	
300	8,3-8,4	1,3- 1,9	0,4(0,7)	8,3-8,4	1,3- 1,9	
		*with return throttle			* without return throttle	

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,9	750-755	-	-	-	-	-	-
				6,1	780-790						

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
(1 u.2)		-	-	-	(1)	
700	142,0-144,0 (139,0-147,0)				100	130,0-150,0
					(2)	
					100	140,0-160,0 (136,0-164,0)

Checking values in brackets

9.83

K20

K20

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 b
5. Edition

En

Testoil-ISO 4113

PE 8 P 110 A 320 LS 3802 RQ 300/1150 PA 490 (1)
RQV 300-1150 PA 524 (2)

supersedes 8.80
company: Daimler-Benz
engine: OM 422
184 Kw (250 Ps)
Komb.-Nr. 0 401 848 714
0 401 848 724

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1
0 -45 -90 -135-180-225-270-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) 4,00-4,10 mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes "1" 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes "2" 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,8-10,9	10,0 - 10,2	0,4(0,8)	11,2+0,1	10,2 - 10,4	n = 1150
300	8,1-8,3	1,1 - 1,7	0,4(0,7)	8,2-8,3	1,2 - 1,8	n = 300
600	-	C, Sp. 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

RQ - 490

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	9,8 4,0	1195-1210 1125-1255	300	8,2	100 300 420-460 480	min.9,7 8,1-8,3 =2,0 0 - 1	1150 600	10,8-10,9 10,8-11,0
1150 1350	0 - 1 Breakaway										

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
1150	100,0 - 102,0 (97,0 - 105,0)	600	600	85,0 - 89,0 (82,0 - 92,0)	100	130,0-150,0

Checking values in brackets

9.83

K21

K21

B. Governor Settings

Upper rated speed: Degree of deflection of control lever (1)	rev/min Control rod travel mm (2)	Control rod travel mm rev/min (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever (4)	rev/min	Control rod travel mm	Lower rated speed: Degree of deflection of control lever (3a)	rev/min	Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca.18	100 300	min. 9,7 8,2-8,3	250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,6
ca. 64	10,2 4,0 1350	1190-1200 1230-1260 0 - 1,0				330-465				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min	cm³/1000 strokes	Rotational-speed limitation intermediate speed (2b) (4a): rev/min	Fuel delivery characteristics high idle speed (5a) (5b): rev/min	cm³/1000 strokes	Starting fuel delivery Idle switching point (6): rev/min	cm³/1000 strokes	Torque-control travel (5): rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	102,0-104,0 (99,0-107,0)	1190-1200*	600	90,0 - 94,0 (87,0 - 97,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever (1)	rev/min Control rod travel mm (2)	Control rod travel mm rev/min (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever (4)	rev/min	Control rod travel mm	Lower rated speed: Degree of deflection of control lever (3a)	rev/min	Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min	cm³/1000 strokes	Rotational-speed limitation intermediate speed (2b) (4a): rev/min	Fuel delivery characteristics high idle speed (5a) (5b): rev/min	cm³/1000 strokes	Starting fuel delivery Idle switching point (6): rev/min	Torque-control travel (5): rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6c
5. Edition
En

PE 8 P 110 A 320 LS 3802 RQV 300-1150 PA 524-2
RQV 300-1150 PA 524-3

supersedes .82
company: Daimler-Benz
engine: OM 422
206 kW (280 PS)

Komb.-Nr. 0 401 848 712
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45°±0,5° (±0,75°)

See Service Information VDT-I-401/102

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC) Zyl. 8; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	12,2 - 12,4	0,4(0,8)	12,3+0,1	13,1-13,3	
300	8,1-8,3	1,3 - 1,9	0,4(0,7)	8,1-8,3	1,5- 2,1	
600	-	C, Sp. 4 u. 5	(0,9)	-	C, Sp. 4 u. 5	
	*with return throttle				*without return throttle	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 21	100	min.10,1	250	1,0-1,2
ca. 66	11,3	1190-1200					300	8,1-8,3	550	3,4-3,7
	4,0	1235-1265							850	5,0-5,3
						330-465 (3a)			1150	7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
(1) 1150	122,0-124,0 (119,0-127,0)	1190-1200*	600	114,0-118,0 (111,0-121,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

K23

K23

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1150	15,2-17,8		-	-	-	ca.21	100	min.10,1	250	1,0-1,2
ca. 66	11,3 4,0	1190-1200 1235-1265					330-465 (3a)	300	8,1-8,3	550 850 1150	3,4-3,7 5,0-5,3 7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1150	131,0-133,0 (128,5-135,5)	1190-1200*	600	112,0-116,0 (109,0-119,0)	100	130,0-150,0 (126,0-154,0)	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6e1
1. Edition

En

PE 8 P 110 A 320 LS 3802-1 RQ 300/1150 PA 187-11
Komb.-Nr. 0 401 848 751
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes
company: Daimler-Benz
engine: OM 422
286 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC) Zyl. 8; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	13,1-13,3	0,4(0,75)			
300	8,5-8,7	1,5- 2,1	0,45(0,75)			
600	-	C, Sp. 4 u. 5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,0-14,0	650	13,5	11,3	1195-1210	300	8,6	100	min. 10,0	-	-
				4,0	1235-1265			300	8,5-8,7		
				1350	0-1,5			430-470	= 2,0		
								500	max. 1,8		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1150	131,0-133,0 (128,5-135,5)	600	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

9.83

L1

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 FIA 17,2 b
1. Edition
En

PE 8 P 120 A 920/5 LS 3804 RQ 300/950 PA 474
1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° ± 0,5° (±0,75°)

supersedes –
company: Fiat
engine: 8280.22.007
280 kW
Komb.-Nr. 0 401 848 726

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 - 3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,1+0,1	18,5-18,7	0,5(0,9)			
300	4,9-5,1	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PFR check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600 VH	19,2-20,8 = max 46°	600	20,0	10,1 4,0 1150	995 1010 1030-1060 0 - 1,0	300	5,0	100 300 350-390	min.7,5 4,9-5,1 = 2,0	950 600	11,1-11,2 11,1-11,3

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 995-1010 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed rev/min 6	⑥ Control rod travel mm cm³/1000 strokes 7
LDA 950	0,7 bar 185,0-187,0 (182,0-190,0)	-	LDA 950	0 bar 138,0-140,0 (135,0-143,0)	100	210,0-230,0 (206,0-234,0)

Checking values in brackets

9.83

L2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P.. LS 3804 + RQ..PA 474	0,70		11,1 - 11,2
		0	8,3 - 8,4
		0,36	10,4 - 10,5
		0,29	8,8 - 9,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

L3

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6c1
1. Edition

En

PE 8 P 110 A 320 LS 3802-1 RQV 300-1150 PA 524-9
Komb.-Nr. 0 401 848 752
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes
company Daimler-Benz
engine: OM 422
206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC) Zyl. 8: RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	13,1-13,3	0,4(0,75)			
300	8,0-8,2	1,5- 2,1	0,45(0,75)			
600	-	C, Sp. 4 u. 5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 21	100	min. 9,7	250	1,0-1,2
ca. 66	11,3 4,0	1190-1200 1235-1265				330-465 (3a)	300	8,0-8,2	550 850 1150	3,4-3,7 4,9-5,3 7,6

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	131,0-133,0 (128,5- 135,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

L4

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FIA 17,2 b 1
1. Edition
En

PE 8 P 120 A 920/5 LS 3804 RQV 300-950 PA 475 R
1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° ± 0,5° (± 0,75°)

superseder
company: Fiat
engine: 8280.22
280 kW
numb.-Nr. 0 401 848 730

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 - 3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,1+0,1	18,5-18,7	0,5(0,9)			
300	4,9-5,1	1,3-1,9	0,8(1,2)			
950	8,3-8,4	C.Sp. 4 u. 5	(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	950	15,2-17,8	-	-	-	ca. 11	100	min.7,5	250	1,0-1,3
							300	5,9-6,1	480	3,7-4,2
ca. 64	10,1	990-1000							720	5,6-5,9
	4,0	1075-1105				300-390			950	7,7
	1250	0 - 1,0								
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	990-1000*	LDA	0 bar	100	210,0-230,0	-	-
950	185,0-187,0		950	138,0-140,0		(206,0-234,0		
	(182,0-190,0)			(135,0-143,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

L5

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3804 + RQV..PA 475 R	0,70		11,1 - 11,2
		0	8,3 - 8,4
		0,36	10,4 - 10,5
		0,29	8,8 - 9,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,0 c 1
4. Edition
En

PE 6 P 110 A 320 LS 3805 RQ 300/1150 PA 187-6
Komb.-Nr. 0 401 846 749
1 - 6 - 3 - 5 - 2 - 4
0 - 75-120-195-240-315° ± 0,5° (± 0,75°)

See Service Information VDT-I-401/102

supersedes 11.82
company: Daimler-Benz
engine: OM 421
159 kW (216 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,5+0,1	12,8-13,0	0,4(0,8)	12,5+0,1	13,4-13,6	
300	8,3-8,5	1,2-1,8	0,4(0,7)	8,3-8,5	1,2-1,8	
600	-	C, Sp. 4 u. 5	(0,9)	-	C, Sp. 4 u. 5	
		*with return throttle			* without return throttle	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0 - 1,0	300	8,4	100 300 430-470	min.10,0 8,3-8,5 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1195-1210 min

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
(1) 1150	128,0-130,0 (125,0-133,0)	600	600	120,0-124,0 (117,0-127,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

9.83

L7

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0 - 1,0	300	8,4	100 300 430-470	min. 10,0 8,3-8,5 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 1195-1210 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	Control rod travel: cm^3/1000 strokes / mm
1	2	3	4	5	6	7
(2) 1150	134,0-136,0 (131,5-138,5)	600	600	116,0-120,0 (113,0-123,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	Control rod travel: cm^3/1000 strokes / mm
1	2	3	4	5	6	7

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6h2
2. Edition
En

PE 8 P 120 A 320 LS 3807 RQ 900 PA 310 R
Komb.-Nr. 0 401 848 743
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes 3.81
company: Daimler-Benz
engine: OM 422 A
229 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,9 -4,1 (3,95-4,15) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	17,9-18,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,0	900-905	-	-	-	-	-	-
				4,0	945-955						

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: All 900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
850	179,0 - 181,0 (176,0 - 184,0)	-	-	-	100	160,0 - 180,0 (156,0 - 184,0)

Checking values in brackets

9.83

L9

PE 8 P 120 A 320 LS 3807 RQ 1050 PA 310
Komb.-Nr. 0 401 848 742
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes 3.81
company: Daimler-Benz
engine: OM 422 A
228 kW (310 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,3+0,1	17,3 - 17,5	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,3	1050-1055	-	-	-	-	-	-
				4,0	1090-1105						

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1050-1055 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1000	173,0 - 175,0 (170,0 - 178,0)	-	-	-	100	180,0 - 200,0 (176,0 - 204,0)

Checking values in brackets

9.83

L10

Test Specifications Fuel Injection Pumps and Governors

② WPP 001/4 MB 14,6b3
2. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 750 PA 374 R
Komb.-Nr. 0 401 848 741
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes 10.82
company: Daimler-Benz
engine: OM 422 A
196 kW (266 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC) Zyl. 8; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	18,4 - 18,6	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider ① PRG check Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,1 4,0	750-755 785-795	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
700	184,0 - 186,0 (181,0 - 189,0)	-	-	-	100	180,0-200,0 (176,0-204,0)

Checking values in brackets

9.83

L11

L1A

PE 8 P 120 A 320 LS 3807 RQ 300/1150 PA 511-2

Komb.-Nr. 0 401 848 747

supersedes 1.83

company Daimler-Benz

engine OM 422 LA 276 kW (375 PS)

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

Values only applx to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9 - 19,1	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			
1150	-	C, Col.1+2	0,75			
600	-	C, Col.4+5	0,75			
500	-					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,1-20,8	600	19,9	10,6	1195-1210	300	,3	100	min. 6,0	-	-
VH-	max. 46°			4,0	1250-1280			300	4,2 -4,4		
								335-	875=2,0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At 1195-1210 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar	-	LDA	0,7 bar	100	140,0 - 160,0
900	189,0 - 191,0 (186,0 - 194,0)		600	182,0 - 186,0 (179,0 - 189,0)		(136,0-164,0)
LDA	0,7 bar		LDA	0 bar		
1150	185,0 - 189,0 (182,0 - 192,0)		500	139,0 - 141,0 (136,0 - 144,0)		

Checking values in brackets

9.83

L12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3807 + RQ..PA 511-2	0,44		11,1 - 11,3
		0,70	11,6 - 11,7
		0	10,1 - 10,2
		0,34	10,3 - 10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

L13

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 1 1
3.Edition

En

PE8P120A320LS3807 RQV 300-1150PA526-2
1-8-7-2-6-3-5-4 je 45° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 1.83-
company Daimler-Benz
engine OM 422 LA
276 kW (375PS)
Komb.-Nr. 0 401 848 748

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			
1150	-	C,Sp. 1 u. 2	0,75			
600	-	C, Sp.4 u. 5	0,75			
500	-					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.10	100	min.6,0	250	1,0-1,2
							300	4,2-4,4	550	3,4-3,7
									850	4,9-5,3
ca.65	10,6	1190-1200				320-465			1150	7,6
	4,0	1230-1260								
	1350	0- 1,0				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,7 bar 189,0-191,0 (186,0-194,0)	1190-1200*	LDA 500	0,7 bar 182,0-186,0 (179,0-189,0)	100	140,0-160,0 (136,0-164,0)	-	-
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

L14

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

L14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE8P..LS3807 + .. PA526-2	0,44	0,70 0 0,34	11,1-11,3 11,6-11,7 10,1-10,2 10,3-10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 K
3. Edition
En

PE 8 P 120 A 320 LS 3807 RQV 300-1150 PA 545
1-8-7-2-6-3-5-4 ie 45 ° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

superseded 10.82
company Daimler-Benz
engine OM 422 A
243 kW (330PS)
Komb.-Nr. 0 401 848 732

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7+0,1	15,7-15,9	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.11	100	min.6,0	250	1,0-1,2
							300	4,5-4,7	550	3,4-3,8
ca. 64	9,7	1190-1200							850	4,9-5,4
	4,0	1225-1255				325-460			1150	7,7
	1350	0 - 1,0				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 156,5-158,5 (153,5-161,5)	1190-1200*	LDA 900	0,7 bar 164,0-168,0 (161,0-171,0)	100	120,0-140,0 (116,0-144,0)	1150	10,7+0,1
LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)		LDA 500	0 bar 137,0-139,0 (134,0-142,0)			600	11,4+0,1
							900	10,8+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.83

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

L16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE8P..LS3807 mit ..PA 545	0,47	0,70 0 0,40	11,2-11,3 11,4-11,5 10,5-10,6 10,6-10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 14,6 p
1. Edition

En

PE 8 P 120 A 320 LS 3816 RSV 650-1150 PO/823

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –

company Daimler-Benz

engine OM 422 A
206 kW
Komb.-Nr. 0 401 878703

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3.	Spring pre-tensioning (torque-control valve) mm 6
1130	9,5-9,6	14,1-14,3	0,5 (0,9)			
650	3,5-3,7	1,6-2,2	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	650	3,6	1150	9,5-9,6
	x = 2,0								700	10,0-10,2
ca. 40	8,5	1160-1170							1050	9,6- 9,8
(2a)	4,0	1185-1200								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	141,0-143,0 (138,0-146,0)	1160-1170*	900	152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.83

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 18,3 c
2. Edition

En

PE 10 P 110 A 320 LS 3818 RQ 300/1150 PA 437-2

supersedes 8.32
company Daimler-Benz
engine: OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 705

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC) Zyl. 10; RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1150	12,1+0,1	12,6 - 12,8	0,4 (0,8)			
300	8,5-8,7	1,2 - 2,0	0,4 (0,7)			
600 900	-	C, Sp. 4 u.5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check (1) Control rod travel		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	11,1 4,0 1350	1190-1205 1225-1255 0 - 1,5	300	6,1	100 300 400-440	min.7,7 6,0-6,2 = 2,0	1150 600 900	12,1+0,1 12,5+0,1 12,4+0,2

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1190 - 1205 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
1150	126,0-128,0 (123,0-131,0)	-	600	114,0-118,0 (111,0-121,0)	100	140,0-160,0 (136,0-164,0)
			900	120,0-125,0 (117,0-128,0)		

Checking values in brackets

9.83

L19

L19

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d 1
2. Edition
En

PE 10 P 110 A 320 LS 3818-1 RQV 350-1150 PA 678
1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 3.83
company: Daimler-Benz
engine: OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 709

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,5+0,1	12,2-12,4	0,4(0,8)			
350	7,9-8,1	1,4-2,2	0,4(0,7)			
600 900	-	C, Sp. 4 u. 5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.18	100	min.10,0	300	1,2-1,4
ca. 62	10,5	1190-1200					350	7,9-8,1	580	3,6-3,9
	4,0	1250-1280							870	5,2-5,6
	1400	0-1,0				330-500 (3a)			1150	7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,0-127,0)	1190-1200*	600	112,0-116,0 (109,0-119,0)	100	130,0-150,0	1150	11,5+0,1
							600	12,1+0,1
1150	92,0-94,0 (89,0-97,0) **		900	113,0-118,0 (110,0-121,0)			900	11,8+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Adjusted at the inner lever of the reduced-delivery stop

9.83

L20

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

L20

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 21,9 a 1
2. Edition
En

PE 12 P 120 A 320 LS 3819 RQ 900 PA 634

supersedes 3.83

company: Daimler-Benz

OM 424 A

374 kW

1 - 5 - 9 - 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0 -15 -60 -75 -120-135-180-195-240-255-300-315° ± 0,5°(± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Komb.-Nr.
0 401 840 704

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,8+0,1	18,3-18,5	0,5 (0,8)			
300	4,8-5,0	1,2-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,8 4,0 1050	900-905 932-942 max. 1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At 900 - 905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
850	183,0-185,0 (180,0-188,0)	-	-	-	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

9.83

L21

Test Specifications Fuel Injection Pumps and Governors

40

WPP 00 1/4 MB 21,9a

4. Edition

En

Testoil-ISO 4113

PE 12 P 120 A 320 LS 3819 RQ 750 PA 635

supersedes 9.83

company: Daimler-Benz

engine: OM 424 A
330 kW (449 PS)
Generator

1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7- 12
0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Komb.-Nr. 0 401 840 705

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	19,3 - 19,5	0,5(0,8)			
300	4,8-5,0	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,5 4,0 900	750-755 780-790 0 - 1,0	-	-	-	-	-	-

750-755 min⁻¹

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	193,0 - 195,0 (190,0 - 198,0)	-	-	-	100	~~160,0 - 180,0~~ (156,0-184,0)

Checking values in brackets

9.83

L22

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.